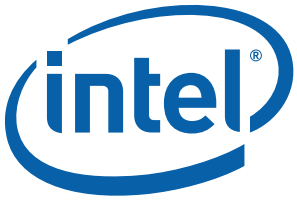

Intel® Desktop Board DH61CR Product Guide

Order Number: G23547-001

Revision History

Revision	Revision History	Date
-001	First release of the Intel® Desktop Board DH61CR Product Guide	January 2011

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Contact your local Intel sales office or your distributor to obtain the latest specifications and before placing your product order.

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Preface

This Product Guide gives information about board layout, component installation, BIOS update, and regulatory requirements for Intel® Desktop Board DH61CR.

Intended Audience

The Product Guide is intended for technically qualified personnel. It is not intended for general audiences.

Use Only for Intended Applications

All Intel Desktop Boards are evaluated as Information Technology Equipment (I.T.E.) for use in personal computers (PC) for installation in homes, offices, schools, computer rooms, and similar locations. The suitability of this product for other PC or embedded non-PC applications or other environments, such as medical, industrial, alarm systems, test equipment, etc. may not be supported without further evaluation by Intel.

Document Organization

The chapters in this Product Guide are arranged as follows:

1 Desktop Board Features: a summary of product features

2 Installing and Replacing Desktop Board Components: instructions on how to install the Desktop Board and other hardware components

3 Updating the BIOS: instructions on how to update the BIOS

A Error Messages and Indicators: information about BIOS error messages and beep codes

B Regulatory Compliance: describes the board's adherence to safety standards and EMC regulations and its product certifications

Conventions

The following conventions are used in this manual:

CAUTION

Cautions warn the user about how to prevent damage to hardware or loss of data.

NOTE

Notes call attention to important information.

Terminology

The table below gives descriptions of some common terms used in the product guide.

Term	Description
GB	Gigabyte (1,073,741,824 bytes)
GHz	Gigahertz (one billion hertz)
KB	Kilobyte (1024 bytes)
MB	Megabyte (1,048,576 bytes)
Mb	Megabit (1,048,576 bits)
MHz	Megahertz (one million hertz)

Contents

1 Desktop Board Features

Supported Operating Systems....11
Desktop Board Components....12
Processor....14
Intel® H61 Express Chipset....15
Main Memory....15
Graphics Subsystem....16
- Integrated Graphics....16
  - Analog Display (VGA)....16
  - Digital Visual Interface....16
- PCI Express* x16 Graphics....16

Audio Subsystem....17
LAN Subsystem....18
USB Support....18
SATA Support....19
- SATA RAID....19
- Intel® Rapid Recover Technology (Intel® RRT)....20

Expandability....20
Legacy I/O....20
BIOS....20
- SATA Auto Configuration....21
- PCI*/PCI Express Auto Configuration....21
- BIOS Security Passwords....21
- Intel Manageability Technology....22
  - Intel® MEBX Reset Header....22
  - Trusted Platform Module (TPM) Support....23
- Fan Speed Control and Hardware Monitoring....23
- Power Management....23
  - Software Support....24
  - Hardware Support....24

Onboard Speaker....27
Real-Time Clock Subsystem....27

2 Installing and Replacing Desktop Board Components

Before You Begin....29
Installation Precautions....30
- Prevent Power Supply Overload....30
- Observe Safety and Regulatory Requirements....30

Installing the I/O Shield....31
Installing and Removing the Desktop Board....32
Installing and Removing a Processor....33
- Installing a Processor....33
- Installing a Processor Fan Heat Sink....37
- Connecting the Processor Fan Heat Sink Cable....37
- Removing the Processor....37

Installing and Removing System Memory 38
Installing DIMMs 39
Removing DIMMs.....41
Installing and Removing PCI Express x16 Graphics Cards.....41
Installing a PCI Express x16 Graphics Card 41
Removing a PCI Express x16 Graphics Card.....43
Connecting Serial ATA (SATA) Cables.....44
Connecting to the Internal Headers 45
Front Panel Audio Header 46
S/PDIF Header 46
Chassis Intrusion Header 47
TPM Header 47
Front Panel Header 48
Alternate Front Panel Power LED Header 48
Serial Header 49
Front Panel USB 2.0 Headers.....49
Internal Mono Speaker Header 49
Connecting to the Audio System.....50
Connecting Chassis Fan and Power Supply Cables.....51
Connecting Chassis Fan Cables 51
Connecting Power Supply Cables 52
Setting the BIOS Configuration Jumper 53
Clearing Passwords in the BIOS Setup Program 54
Replacing the Battery 55

3 Updating the BIOS

Updating the BIOS with the Intel® Express BIOS Update Utility.....61
Updating the BIOS Using the F7 Function Key 62
Updating the BIOS with the ISO Image BIOS Update File or the Intel® Flash Memory Update Utility.....63
Obtaining the BIOS Update File 63
Updating the BIOS with the Intel Flash Memory Update Utility.....63
Updating the BIOS with the ISO Image BIOS Update File 64
Recovering the BIOS.....65

A Error Messages and Indicators

BIOS Error Codes.....67
BIOS Error Messages.....68

B Regulatory Compliance

Safety Standards 69
Battery Caution 69
European Union Declaration of Conformity Statement.....70
Product Ecology Statements 71
Recycling Considerations 71
China RoHS 74
EMC Regulations 75
FCC Declaration of Conformity 75
Canadian Department of Communications Compliance Statement.....76
Japan VCCI Statement 76
Korea Class B Statement 77
Ensure Electromagnetic Compatibility (EMC) Compliance.....77

Product Certifications....78
Board-Level Certifications....78
Chassis- and Component-Level Certifications....79
ENERGY STAR*, e-Standby, and ErP Compliance....79

Figures

1. Intel Desktop Board DH61CR Components....12
2. LAN Status LEDs....18
3. Location of the Intel MEBX Reset Header....22
4. Location of the Standby Power Indicator....26
5. Installing the I/O Shield....31
6. Intel Desktop Board DH61CR Mounting Screw Hole Locations....32
7. Unlatch the Socket Lever....33
8. Lift the Load Plate....34
9. Remove the Processor from the Protective Cover....35
10. Install the Processor....35
11. Secure the Load Plate in Place....36
12. Connecting the Processor Fan Heat Sink Power Cable to the Processor Fan Header....37
13. Dual Channel Memory Configuration Example....38
14. Use DDR3 DIMMs....39
15. Installing a DIMM....40
16. Installing a PCI Express x16 Graphics Card....42
17. Removing a PCI Express x16 Graphics Card....43
18. Connecting a Serial ATA Cable....44
19. Internal Headers....45
20. Back Panel Audio Connectors....50
21. Location of the Chassis Fan Headers....51
22. Connecting Power Supply Cables....52
23. Location of the BIOS Configuration Jumper Block....53
24. Removing the Battery....60
25. Intel Desktop Board DH61CR China RoHS Material Self Declaration Table....74

Tables

1. Feature Summary 9
2. Intel Desktop Board DH61CR Components 13
3. LAN Status LEDs States 18
4. Front Panel Audio Signal Names for Intel HD Audio 46
5. Front Panel Audio Header Signal Names for AC ’97 Audio 46
6. S/PDIF Header Signal Names 46
7. Chassis Intrusion Header Signal Names 47
8. TPM Header Signal Names 47
9. Front Panel Header Signal Names 48
10. Alternate Front Panel Power LED Header Signal Names 48
11. Serial Port Header Signal Names 49
12. Front Panel USB 2.0 Headers Signal Names 49
13. Internal Mono Speaker Header Signal Names 49
14. Jumper Settings for the BIOS Setup Program Modes 54
15. BIOS Beep Codes 67
16. Front-panel Power LED Blink Codes 68
17. BIOS Error Messages 68
18. Safety Standards 69
19. EMC Regulations 75
20. Regulatory Compliance Marks 78

1 Desktop Board Features

This chapter briefly describes the features of Intel® Desktop Board DH61CR. Table 1 summarizes the major features of the Desktop Board.

Table 1. Feature Summary

Form Factor	MicroATX (243.84 millimeters [9.60 inches] x 198.12 millimeters [7.80 inches])
Processor Support	• Intel® Core™ i7, Intel® Core™ i5, Intel® Core™ i3, and Intel® Pentium processors in an LGA1155 package: — Integrated graphics processing (processors with Intel® Graphics Technology) — External graphics interface controller — Integrated memory controller
Chipset	Intel® H61 Express Chipset consisting of the Intel® H61 Express Platform Controller Hub (PCH)
Memory Support	• Two 240-pin DDR3 SDRAM Dual Inline Memory Module (DIMM) sockets • Support for DDR3 1333 MHz and DDR3 1066 MHz DIMMs • Support for 1 Gb, 2 Gb, and 4 Gb memory technology • Support for up to 16 GB of system memory with two DIMMs using 4 Gb memory technology • Support for non-ECC memory
Graphics Support	• Integrated graphics support for processors with Intel Graphics Technology: — VGA — DVI-D • Discrete graphics support for PCI Express* 2.0 x16 add-in graphics cards
Audio	Intel® High Definition Audio (Intel® HD Audio): • Realtek* ALC892 audio codec • Front panel audio header (Intel HD Audio and AC ’97 Audio support) • Mono speaker header • S/PDIF audio header
Expansion Capabilities	• One PCI Express 2.0 x16 add-in card connector • Two PCI Express 2.0 x1 add-in card connectors • One Conventional PCI* bus connector

continued

Table 1. Feature Summary (continued)

Peripheral Interfaces	• Ten USB 2.0 ports: — Four USB 2.0 ports are implemented with stacked back panel connectors — Six USB 2.0 front panel ports are implemented through three dual-port internal headers • Four SATA 3 Gb/s ports through the Intel H61 Express Chipset • One serial port header • One parallel port back panel connector • One PS/2* back panel connector for mouse/keyboard support
LAN Support	• Intel® 82579V Gigabit (10/100/1000 Mb/s) Ethernet LAN controller
Legacy I/O	• Nuvoton* W83677HG-i I/O controller for hardware management and serial port, parallel port, and PS/2 support
BIOS	• Intel® BIOS resident in an SPI Flash device • Support for Advanced Configuration and Power Interface (ACPI), Plug and Play, and SMBIOS
Instantly Available PC Technology	• Support for PCI Local Bus Specification, Revision 2.2 • Support for PCI Express Base Specification, Revision 2.0 • Suspend to RAM support • Wake on Conventional PCI, PCI Express, LAN, front panel, serial, USB ports, and PS/2
Hardware Monitoring	• Hardware monitoring through the Nuvoton I/O controller • Voltage sense to detect out of range power supply voltages • Thermal sense to detect out of range thermal values • Three fan headers using PWM control • 4-pin headers for processor, front chassis, and rear chassis fans • 4-wire and 3-wire (linear) fan speed control support for front and rear chassis fans • Support for Platform Environmental Control Interface (PECI)

Supported Operating Systems

The Desktop Board supports the following operating systems:

- Microsoft Windows* 7 Ultimate 64-bit edition
- Microsoft Windows 7 Ultimate 32-bit edition
- Microsoft Windows 7 Professional 64-bit edition
- Microsoft Windows 7 Professional 32-bit edition
- Microsoft Windows 7 Home Premium 64-bit edition
- Microsoft Windows 7 Home Premium 32-bit edition
- Microsoft Windows 7 Starter 64-bit edition
- Microsoft Windows 7 Starter 32-bit edition
- Microsoft Windows Vista* Ultimate 32-bit edition
- Microsoft Windows Vista Business 32-bit edition
- Microsoft Windows Vista Home Premium 32-bit edition
- Microsoft Windows Vista Home Basic 32-bit edition
- Microsoft Windows Vista Ultimate 64-bit edition
- Microsoft Windows Vista Business 64-bit edition
- Microsoft Windows Vista Home Premium 64-bit edition
- Microsoft Windows Vista Home Basic 64-bit edition
- Microsoft Windows* XP Media Center Edition 2005
- Microsoft Windows XP Professional
- Microsoft Windows XP Professional x64 Edition
- Microsoft Windows XP Home

Desktop Board Components

Figure 1 shows the approximate location of the major components on Intel Desktop Board DH61CR.

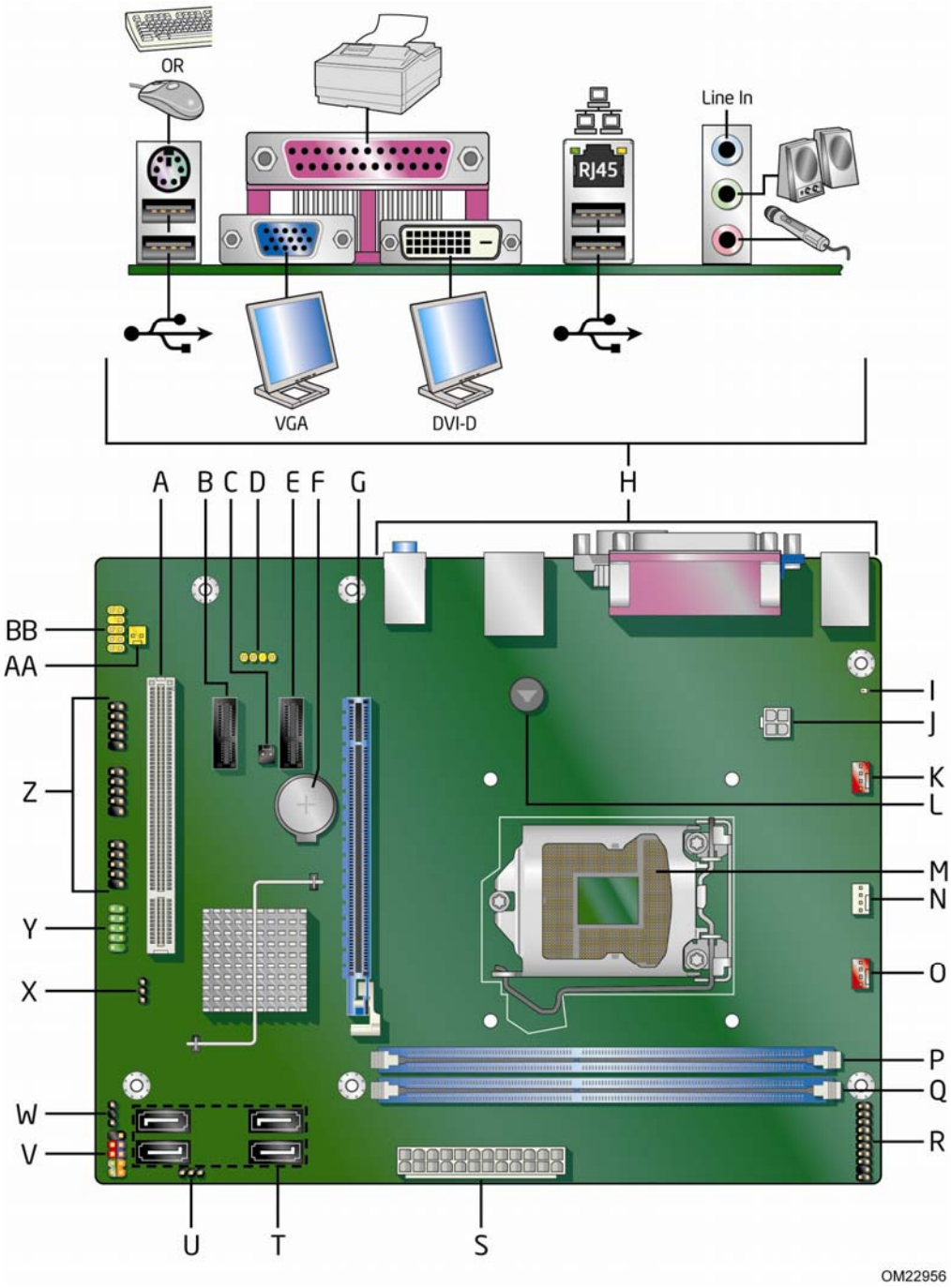


Figure 1. Intel Desktop Board DH61CR Components

Table 2. Intel Desktop Board DH61CR Components

Label	Description
A	Conventional PCI bus add-in card connector
B	PCI Express 2.0 x1 add-in card connector
C	Chassis intrusion header
D	S/PDIF header
E	PCI Express 2.0 x1 add-in card connector
F	Battery
G	PCI Express 2.0 x16 add-in card connector
H	Back panel connectors
I	Standby power indicator LED
J	12 V processor core voltage connector (2 x 2 pin)
K	Rear chassis fan header
L	Speaker
M	Processor socket
N	Processor fan header
O	Front chassis fan header
P	DDR3 DIMM 1 socket
Q	DDR3 DIMM 2 socket
R	Trusted Platform Module (TPM) header
S	Main power connector (2 x 12 pin)
T	SATA connectors
U	BIOS configuration jumper block
V	Front panel header
W	Alternate front panel power LED header
X	Intel® Management Engine BIOS Extension (Intel® MEBX) reset header
Y	Serial port header
Z	Front panel USB 2.0 headers
AA	Internal mono speaker header
BB	Front panel audio header

Online Support

For more information on Intel Desktop Board DH61CR consult the following online resources:

• Intel Desktop Board DH61CR	http://www.intel.com/products/motherboard/index.htm
• Desktop Board Support	http://www.intel.com/p/en_US/support?iid=hdr+support
• Available configurations for Intel Desktop Board DH61CR	http://ark.intel.com
• Supported processors	http://processormatch.intel.com
• Chipset information	http://www.intel.com/products/desktop/chipsets/index.htm
• BIOS and driver updates	http://downloadcenter.intel.com/
• Integration information	http://www.intel.com/support/go/buildit

Processor

CAUTION

Failure to use an appropriate power supply and/or not connecting the 12 V (2 x 2 pin) power connector to the Desktop Board may result in damage to the board, or the system may not function properly.

Intel Desktop Board DH61CR supports Intel Core i7, Intel Core i5, Intel Core i3, and Intel Pentium processors in the LGA1155 package. Processors are not included with the Desktop Board and must be purchased separately. The processor connects to the Desktop Board through an LGA1155 socket.

For information on supported processors for Intel Desktop Board DH61CR, go to http://processormatch.intel.com.

Intel® H61 Express Chipset

The Intel H61 Express Chipset, consisting of the Intel H61 Platform Controller Hub (PCH), provides interfaces to the processor and the USB, SATA, LPC, audio, network, display, and PCI Express interfaces. The PCH is a centralized controller for the board's I/O paths.

Main Memory

NOTE

To be fully compliant with all applicable Intel® SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. If your memory modules do not support SPD, you will see a notification to this effect on the screen at power up. The BIOS will attempt to configure the memory controller for normal operation.

The board has two DIMM sockets and supports the following memory features:

- Two independent memory channels with interleaved mode support
- Support for non-ECC, unbuffered, single-sided or double-sided DIMMs with x8 organization
- 16 GB maximum total system memory (with 4 Gb memory technology)
- Minimum total system memory: 1 GB using 1 Gb x8 modules
- Serial Presence Detect
- DDR3 1333 MHz and DDR3 1066 MHz SDRAM DIMMs

NOTE

32-bit operating systems are limited to a maximum of 4 GB of memory. These operating systems will report less than 4 GB because of the memory used by add-in graphics cards and other system resources.

Graphics Subsystem

The board supports either integrated graphics (Intel Graphics Technology) or PCI Express 2.0 x16 graphics.

Integrated Graphics

The board supports integrated graphics through the Intel® Flexible Display Interface (Intel® FDI) for processors with Intel Graphics Technology.

Analog Display (VGA)

The VGA port supports analog displays. The maximum supported resolution is 2048 x 1536 (QXGA) at a 75 Hz refresh rate. The VGA port is enabled for POST whenever a monitor is attached, regardless of the DVI-D connector status.

Digital Visual Interface

Intel Desktop Board DH61CR supports Digital Visual Interface (DVI) displays with a DVI-D back panel port.

The DVI-D port supports only digital DVI displays. The maximum supported resolution is 2048 x 1536 at a 75 Hz refresh rate (QXGA). The DVI-D port is compliant with the DVI 1.0 specification.

PCI Express* x16 Graphics

Intel Core i7, Intel Core i5, Intel Core i3, and Intel Pentium processors in an LGA1155 package support discrete add-in graphics cards via the PCI Express 2.0 x16 add-in card connector. The board supports the following PCI Express speeds:

- PCI Express 2 frequency of 2.5 GHz which results in 5.0 Gb/s in each direction (500 MB/s) per lane. The maximum theoretical bandwidth on the interface is 8 GB/s in each direction, simultaneously, when operating in x16 mode.
- PCI Express 1 frequency of 1.25 GHz resulting in 2.5 Gb/s each direction (250 MB/s) per lane. The maximum theoretical bandwidth on the interface is 4 GB/s in each direction, simultaneously, when operating in x16 mode.

Audio Subsystem

The board supports Intel High Definition Audio through a Realtek ALC892 audio codec.

The Realtek ALC892-based audio subsystem provides the following features:

- 6-channel audio with independent multi-streaming stereo
- Advanced jack sense for the back panel audio connectors that enables the audio codec to recognize the device that is connected to an audio port. The back panel audio connectors are capable of retasking according to the user's definition, or can be automatically switched depending on the recognized device type.
- Stereo input and output via back panel connectors
- Headphone and Mic in functions for front panel audio connectors
- A signal-to-noise (S/N) ratio of 90 dB

The board provides onboard audio headers and back panel connectors.

The onboard audio headers include the following:

- Front panel audio (a 2 x 5 pin header that provides headphone and mic in signals for front panel audio connectors)
- S/PDIF audio header (1 x 4 pin header)
- Internal mono speaker header (1 x 2 pin header)

Front panel headphone output is supported by a separate audio channel pair, allowing multi-streaming audio configurations such as simultaneous surround sound playback and stereo audio conferencing (through speakers connected to the back panel audio connectors and a headset connected to the front panel audio connectors).

The onboard internal mono speaker header allows connection to an internal, low-power speaker for basic system sound capability. The subsystem is capable of driving a speaker load of 8 Ω at 1 W (rms) or 4 Ω at 1.5 W (rms).

The onboard S/PDIF header allows connection to coaxial or optical adapters for digital audio output.

The back panel audio connectors are configurable through the audio device drivers. Audio software and drivers are available from http://downloadcenter.intel.com/.

LAN Subsystem

The LAN subsystem includes:

- Intel 82579V Gigabit (10/100/1000 Mb/s) Ethernet LAN controller
- RJ-45 LAN connector with integrated status LEDs

LAN software and drivers are available at http://downloadcenter.intel.com/.

Two LEDs are built into the RJ-45 LAN connector located on the back panel (see Figure 2). These LEDs indicate the status of the LAN as shown in Table 3.

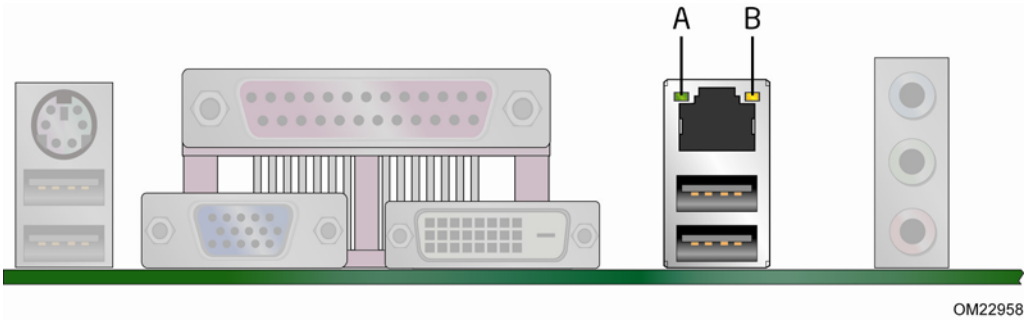


Figure 2. LAN Status LEDs

Table 3. LAN Status LEDs States

LED	LED Color	LED State	Indicates
A (Link/Activity)	Green	Off	LAN link is not established
		On	LAN link is established
		Blinking	LAN activity is occurring
B (Link Speed)	N/A	Off	10 Mb/s data rate
	Green	On	100 Mb/s data rate
	Yellow	On	1000 Mb/s data rate

USB Support

The Desktop Board supports USB 2.0. There are 10 USB 2.0 ports (four ports routed to back panel connectors and six ports routed to three onboard headers). The USB 2.0 ports are high-speed, full-speed, and low-speed capable. USB 2.0 support requires both an operating system and drivers that fully support USB 2.0 transfer rates.

SATA Support

The board provides four SATA 3.0 Gb/s channels, through the PCH, which support one device per channel.

SATA RAID

The Intel H61 PCH supports Intel® Rapid Storage Technology (Intel® RST) which enables the following RAID (Redundant Array of Independent Drives) levels:

- RAID 0 - data striping
- RAID 1 - data mirroring
- RAID 0+1 (or RAID 10) - data striping and mirroring
- RAID 5 - distributed parity

NOTE

In order to use supported RAID features, you must first enable RAID in the BIOS. Also, during Microsoft Windows XP installation, you must press F6 to install the RAID drivers. See your Microsoft Windows XP documentation for more information about installing drivers during installation. Both Microsoft Windows Vista and Microsoft Windows 7 include the necessary RAID drivers for both AHCI and RAID without the need to install separate RAID drivers using the F6 switch in the operating system installation process.

Intel® Rapid Recover Technology (Intel® RRT)

The board incorporates Intel® Rapid Recover Technology (Intel® RRT). Intel RRT is a feature of Intel RST. Intel RRT uses RAID 1 (mirroring) functionality to copy data from a designated master drive to a designated recovery drive. The master drive data can be copied to the recovery drive either continuously or on request.

When using the continuous update policy, changes made to the data on the master drive while the recovery drive is disconnected or offline are automatically copied to the recovery drive when it is reconnected. When using the on request update policy, the master drive data can be restored to a previous state by copying the data on the recovery drive back to the master drive.

Expandability

Intel Desktop Board DH61CR provides the following expansion capability:

- One PCI Express 2.0 x16 interface
- Two PCI Express 2.0 x1 interfaces
- One Conventional PCI bus interface

Legacy I/O

The board's Legacy I/O Controller provides the following legacy features:

- PS/2 back panel connector for mouse/keyboard support
- One serial port header
- One parallel port connector on the back panel
- Serial IRQ interface compatible with serialized IRQ support for Conventional PCI bus systems
- Intelligent power management, including a programmable wake-up event interface
- Conventional PCI bus power management support

The BIOS Setup program provides configuration options for the Legacy I/O controller.

BIOS

The BIOS provides the Power-On Self-Test (POST), the BIOS Setup program, and the PCI/PCI Express and SATA auto-configuration utilities. The BIOS is stored in the Serial Peripheral Interface (SPI) Flash memory device.

The BIOS can be updated by following the instructions in Chapter 3 starting on page 61.

SATA Auto Configuration

If you install a SATA device (such as a hard disk drive) in your computer, the auto-configuration utility in the BIOS automatically detects and configures the device for your computer. You do not need to run the BIOS Setup program after installing a SATA device. You can override the auto-configuration options by specifying manual configuration in the BIOS Setup program.

PCI*/PCI Express Auto Configuration

If you install a Conventional PCI or PCI Express add-in card in your computer, the PCI/PCI Express auto-configuration utility in the BIOS automatically detects and configures the resources (IRQs, DMA channels, and I/O space) for that add-in card. You do not need to run the BIOS Setup program after you install a Conventional PCI or PCI Express add-in card.

BIOS Security Passwords

The BIOS includes security features that restrict whether the BIOS Setup program can be accessed and who can boot the computer. A supervisor password and a user password can be set for the BIOS Setup and for booting the computer, with the following restrictions:

- The supervisor password gives unrestricted access to view and change all Setup options. If only the supervisor password is set, pressing <Enter> at the password prompt of Setup gives the user restricted access to Setup.
- If both the supervisor and user passwords are set, you must enter either the supervisor password or the user password to access Setup. Setup options are then available for viewing and changing depending on whether the supervisor or user password was entered.
- Setting a user password restricts who can boot the computer. The password prompt is displayed before the computer is booted. If only the supervisor password is set, the computer boots without asking for a password. If both passwords are set, you can enter either password to boot the computer.

For instructions on resetting the password, go to Clearing Passwords on page 54.

Intel Manageability Technology

Intel offers IT organizations tamper-resistant and persistent management capabilities. With Intel manageability, IT organizations can easily get accurate platform information, and can perform remote updating, diagnostics, debugging and repair of a system, regardless of the state of the operating system or the power state of the system.

The Intel manageability subsystem consists of:

- Intel® Management Engine (Intel® ME) microcontroller embedded in the Intel H61 PCH
- BIOS/SPI Flash
- Intel® MEBX reset header

Intel® MEBX Reset Header

This header (see Figure 3) allows you to reset the Intel ME configuration to factory defaults. Momentarily shorting pins 1 and 2 with a jumper (not supplied) will accomplish the following:

- Return all Intel ME parameters to their default values.
- Delete any user entered information, including PID/PPS and user entered Hash Certificates. USB key and remote configuration data will be removed if the parameters are not default parameters.
- Reset the Intel MEBX password to the default value (admin).

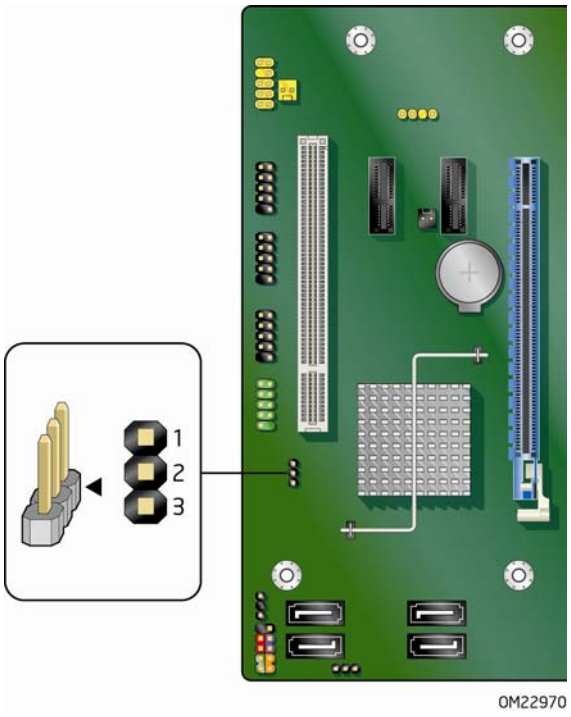


Figure 3. Location of the Intel MEBX Reset Header

NOTE

Software with Intel manageability capability is required to take advantage of the Intel platform management capabilities.

Trusted Platform Module (TPM) Support

Intel Desktop Board DH61CR provides a header to connect to an external TPM. The header is shown in Figure 1, R on page 12 and the header pinout is listed in Table 8 on page 47. TPMs are designed to enhance platform security by providing a protected space for key operations and other security critical tasks. Using both hardware and software, the TPM protects encryption and signature keys at their most vulnerable stages—operations when the keys are being used unencrypted in plain-text form. TPMs shield unencrypted keys and platform authentication information from software-based attacks.

Fan Speed Control and Hardware Monitoring

The features of the hardware monitoring and fan speed control include:

- Thermal sensors in the processor and the Intel PCH, as well as near the processor voltage regulators and system memory
- Monitoring of system voltages to detect levels above or below acceptable values
- Thermally monitored closed-loop fan control for all three fans that can adjust fan speed as needed
- Support for chassis security feature that detects if the chassis cover has been removed. The security feature uses a mechanical switch on the chassis that can be connected to the chassis intrusion header on the Desktop Board.

Power Management

Power management is implemented at several levels, including software support through the Advanced Configuration and Power Interface (ACPI) and the following hardware support:

- Power connectors
- Fan headers
- LAN wake capabilities
- Instantly Available PC technology (Suspend to RAM)
- +5 V standby power indicator LED
- Wake from USB
- PCI Power Management Event signal (PME#) wakeup support
- PCI Express WAKE# signal support
- Wake from serial devices
- Wake from PS/2 devices

Software Support

ACPI

ACPI gives the operating system direct control over the power management and Plug and Play functions of a computer. The use of ACPI with the Desktop Board requires an operating system that provides full ACPI support.

Hardware Support

Power Connectors

ATX12V-compliant power supplies can turn off the computer power through system control. When an ACPI-enabled computer receives the correct command, the power supply removes all non-standby voltages.

When resuming from an AC power failure, the computer returns to the power state it was in before power was interrupted (either on or off). The computer's response can be set by using the Last Power State feature in the BIOS Setup program's Boot menu.

The Desktop Board has two power connectors. See Figure 22 on page 52 for the location of the power connectors.

Fan Headers

The function/operation of the fans is as follows:

- The fans are on when the board is in the ACPI S0 state.
- The fans are off when the computer is in the ACPI S3, S4, or S5 state.
- Each fan header is wired to a tachometer input.
- All fan headers support closed-loop fan control that can adjust the fan speed or switch the fan on or off as needed.
- All fan headers have a +12 V DC connection.
- All fan headers are controlled by Pulse Width Modulation.
- The front and rear chassis fan headers support Linear Fan Control on 3-wire fans.

The Desktop Board has a 4-pin processor fan header and two 4-pin chassis fan headers that are compatible with 4-wire and 3-wire chassis fans.

LAN Wake Capabilities

CAUTION

For LAN wake capabilities, the 5 V standby line for the power supply must be capable of delivering adequate +5 V standby current. Failure to provide adequate standby current when using this feature can damage the power supply.

LAN wakeup capabilities enable remote wake-up of the computer through a network. The LAN subsystem monitors network traffic and upon detecting a Magic Packet* frame, it asserts a wake-up signal that powers up the computer.

Instantly Available PC Technology

CAUTION

For Instantly Available PC technology, the 5 V standby line for the power supply must be capable of delivering adequate +5 V standby current. Failure to provide adequate standby current when using this feature can damage the power supply and/or effect ACPI S3 sleep state functionality.

Instantly Available PC technology enables the board to enter the ACPI S3 (Suspend-to-RAM) sleep state. Instantly Available PC technology enables the board to enter the ACPI S3 (Suspend-to-RAM) sleep-state. While in the S3 sleep-state, the computer will appear to be off (the power supply is off and the front panel power LED will behave as configured by the BIOS "S3 State Indicator" option). When signaled by a wake-up device or event, the system quickly returns to its last known wake state.

The Desktop Board supports the *PCI Bus Power Management Interface Specification*. Add-in cards that support this specification can participate in power management and can be used to wake the computer.

The use of Instantly Available PC technology requires operating system support and PCI 2.2 compliant add-in cards, PCI Express add-in cards, and drivers.

+5 V Standby Power Indicator LED

CAUTION

If the AC power has been switched off and the standby power indicator is still lit, disconnect the power cord before installing or removing any devices connected to the board. Failure to do so could damage the board and any attached devices.

The Desktop Board's standby power indicator LED, shown in Figure 4, is lit when there is standby power still present on the board even when the computer appears to be off. For example, when this green LED is lit, standby power is still present at the memory module sockets and the PCI connector.

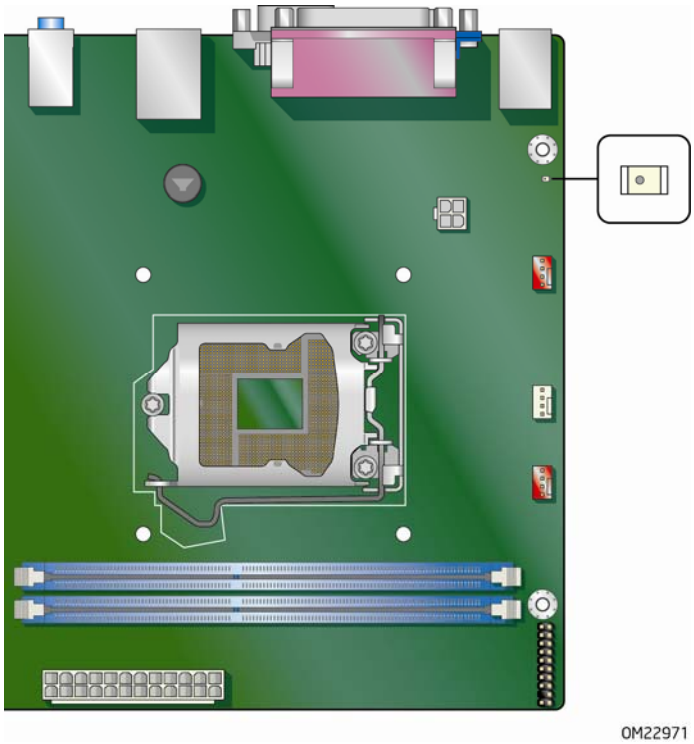


Figure 4. Location of the Standby Power Indicator

For more information on standby current requirements for the Desktop Board, refer to the Technical Product Specification at http://www.intel.com/support/motherboards/desktop/.

Wake from USB

NOTE

Wake from USB requires the use of a USB peripheral that supports Wake from USB and an operating system that supports Wake from USB.

USB bus activity wakes the computer from an ACPI S3 state.

PCI PME# Signal Wake-up Support

When the PME# signal on the Conventional PCI bus is asserted, the computer wakes from an ACPI S3, S4, or S5 state.

PCI Express WAKE# Signal Wake-up Support

When the WAKE# signal on a PCI Express bus add-in card is asserted, the computer wakes from an ACPI S3, S4, or S5 state.

Wake from Serial Devices

Serial port activity wakes the computer from an ACPI S3 state.

Wake from PS/2 Devices

PS/2 device activity wakes the computer from an ACPI S3 state.

Onboard Speaker

A speaker is mounted on the Desktop Board. The speaker provides audible error code (beep code) information during the Power-On Self-Test (POST). Refer to Appendix A for a description of the beep codes that may be generated during the POST.

Real-Time Clock Subsystem

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery.

The clock is accurate to ± 13 minutes/year at 25 ºC with standby power applied by the power supply.

NOTE

If the battery and AC power fail, date and time values will be reset and the user will be notified during the POST.

When the battery voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one. Go to page 55 for instructions on how to replace the battery.

2 Installing and Replacing Desktop Board Components

This chapter tells you how to:

- Install the I/O shield
- Install and remove the Desktop Board
- Install and remove a processor
- Install and remove memory
- Install and remove a PCI Express x16 card
- Connect Serial ATA cables
- Connect to the internal headers
- Connect to the audio system
- Connect chassis fan and power supply cables
- Set the BIOS configuration jumper
- Clear passwords
- Replace the battery

Before You Begin

CAUTIONS

The procedures in this chapter assume familiarity with the general terminology associated with personal computers and with the safety practices and regulatory compliance required for using and modifying electronic equipment.

Disconnect the computer from its power source and from any telecommunications links, networks, or modems before performing any of the procedures described in this chapter. Failure to disconnect power, telecommunications links, networks, or modems before you open the computer or perform any procedures can result in personal injury or equipment damage. Some circuitry on the board can continue to operate even though the front panel power button is off.

Follow these guidelines before you begin:

- Always follow the steps in each procedure in the correct order.
- Set up a log to record information about your computer, such as model, serial numbers, installed options, and configuration information.
- Electrostatic discharge (ESD) can damage components. Perform the procedures described in this chapter only at an ESD workstation using an antistatic wrist strap and a conductive foam pad. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Installation Precautions

When you install and test the Intel Desktop Board, observe all warnings and cautions in the installation instructions.

To avoid injury, be careful of:

- Sharp pins on connectors
- Sharp pins on printed circuit assemblies
- Rough edges and sharp corners on the chassis
- Hot components (such as processors, voltage regulators, and heat sinks)
- Damage to wires that could cause a short circuit

Observe all warnings and cautions that instruct you to refer computer servicing to qualified technical personnel.

Prevent Power Supply Overload

Do not overload the power supply output. To avoid overloading the power supply, make sure that the calculated total current loads of all the modules within the computer is less than the output current rating of each of the power supplies output circuits plus enough headroom for desktop board power consumption.

Observe Safety and Regulatory Requirements

Read and follow the instructions in this section and the instructions supplied with the chassis and associated modules. If you do not follow these instructions and the instructions provided by the chassis and module suppliers, you increase your safety risk and the possibility of noncompliance with regional laws and regulations. If the instructions for the chassis are inconsistent with these instructions or the instructions for associated modules, contact the suppliers to find out how you can ensure that your computer meets safety and regulatory requirements.

For information about the Desktop Board's regulatory compliance, refer to Appendix B.

Installing the I/O Shield

The Desktop Board comes with an I/O shield. When installed in the chassis, the shield blocks radio frequency transmissions, protects internal components from dust and foreign objects, and promotes correct airflow within the chassis.

Install the I/O shield before installing the Desktop Board in the chassis. Place the shield inside the chassis as shown in Figure 5. Press the shield into place so that it fits tightly and securely. If the shield does not fit, obtain a properly sized shield from the chassis supplier.

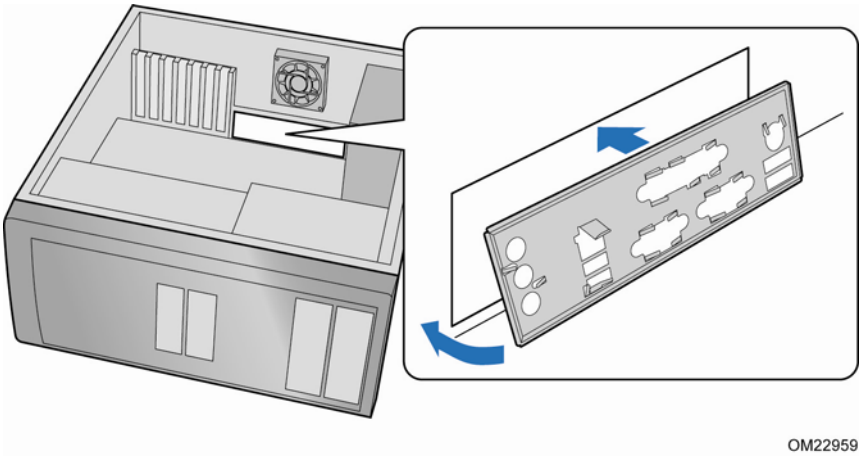


Figure 5. Installing the I/O Shield

Installing and Removing the Desktop Board

CAUTION

Only qualified technical personnel should perform this procedure. Disconnect the computer from its power source before performing the procedures described here. Failure to disconnect the power before you open the computer can result in personal injury or equipment damage.

Refer to your chassis manual for instructions on installing and removing the Desktop Board.

Figure 6 shows the location of the mounting screw holes for Intel Desktop Board DH61CR.

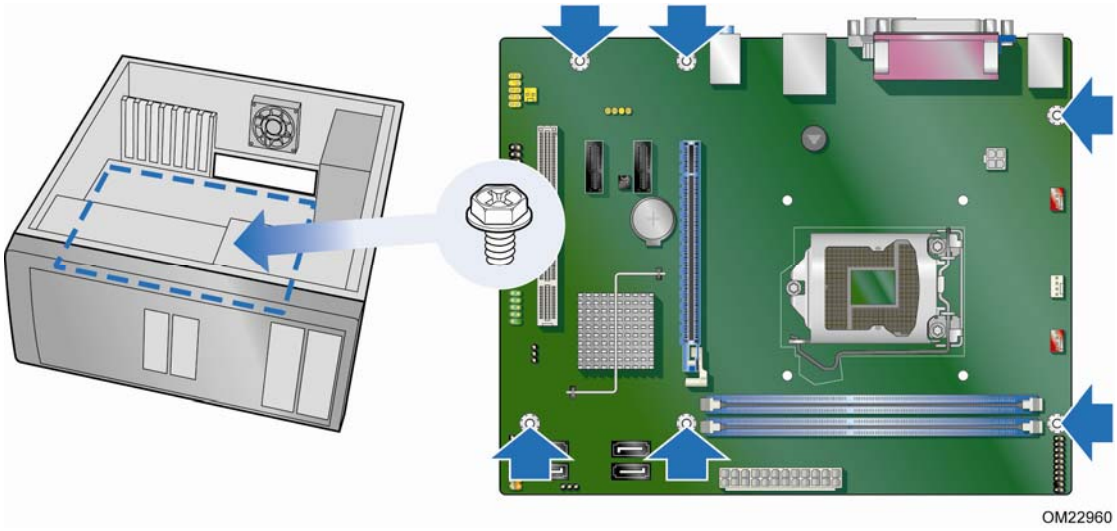


Figure 6. Intel Desktop Board DH61CR Mounting Screw Hole Locations

Installing and Removing a Processor

Instructions on how to install the processor on the Desktop Board are given below.

Installing a Processor

CAUTION

Before installing or removing a processor, make sure the AC power has been removed by unplugging the power cord from the computer; the standby power LED should not be lit (see Figure 4 on page 26). Failure to do so could damage the processor and the board.

To install a processor, follow these instructions:

1. Observe the precautions in "Before You Begin" on page 29.
2. Unlatch the processor socket lever by pushing it down and away from the socket (Figure 7, A, B).

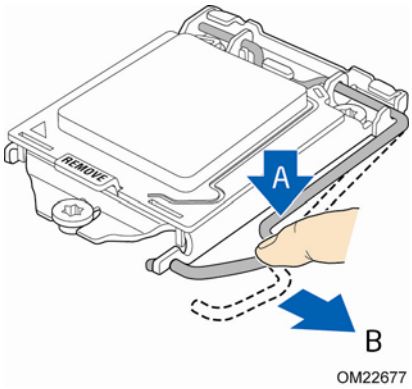


Figure 7. Unlatch the Socket Lever

3. Rotate the socket lever to lift the load plate away from the socket (Figure 8, A). Make sure that the load plate is in the fully open position (Figure 8, B) while being careful not to damage adjacent components. Do not touch the socket contacts.

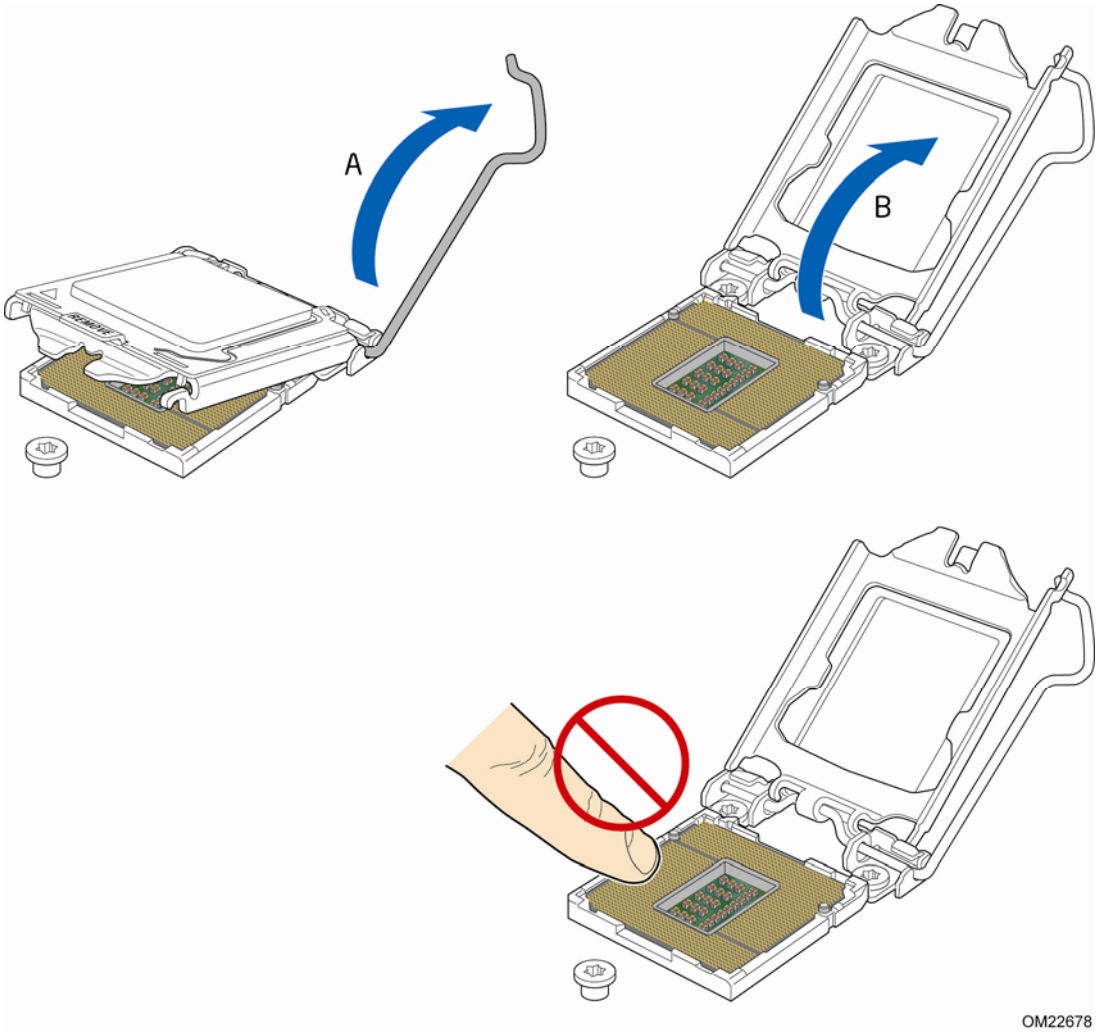


Figure 8. Lift the Load Plate

4. Remove the processor from its protective cover. Hold the processor only at the edges, being careful not to touch the bottom of the processor (see Figure 9).

NOTE

Do not discard the processor cover. Always replace the processor cover if you remove the processor from the socket.

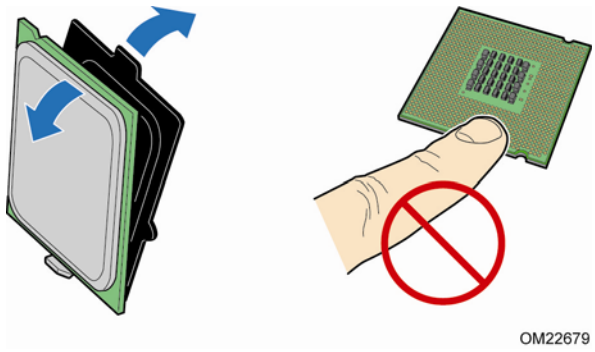


Figure 9. Remove the Processor from the Protective Cover

5. Hold the processor with your thumb and index finger oriented as shown in Figure 10 to align your fingers with the socket finger cutouts. Make sure that the processor Pin 1 indicator (gold triangle) is aligned with the Pin 1 chamfer on the socket (Figure 10, B) and that the notches on the processor align with the posts on the socket (Figure 10, C). Lower the processor straight down without tilting or sliding it in the socket (Figure 10, A).

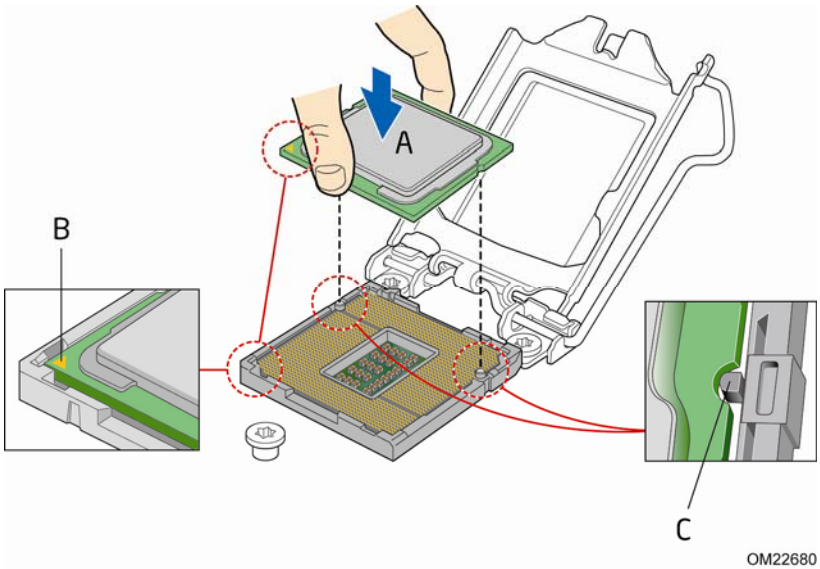


Figure 10. Install the Processor

6. Carefully lower the socket lever (Figure 11, A) while making sure that the front edge of the load plate slides under the shoulder screw cap as the lever is lowered. Latch the socket lever under the load plate tab (Figure 11, C, D). The socket cover (Figure 11, B) will pop off as shown.

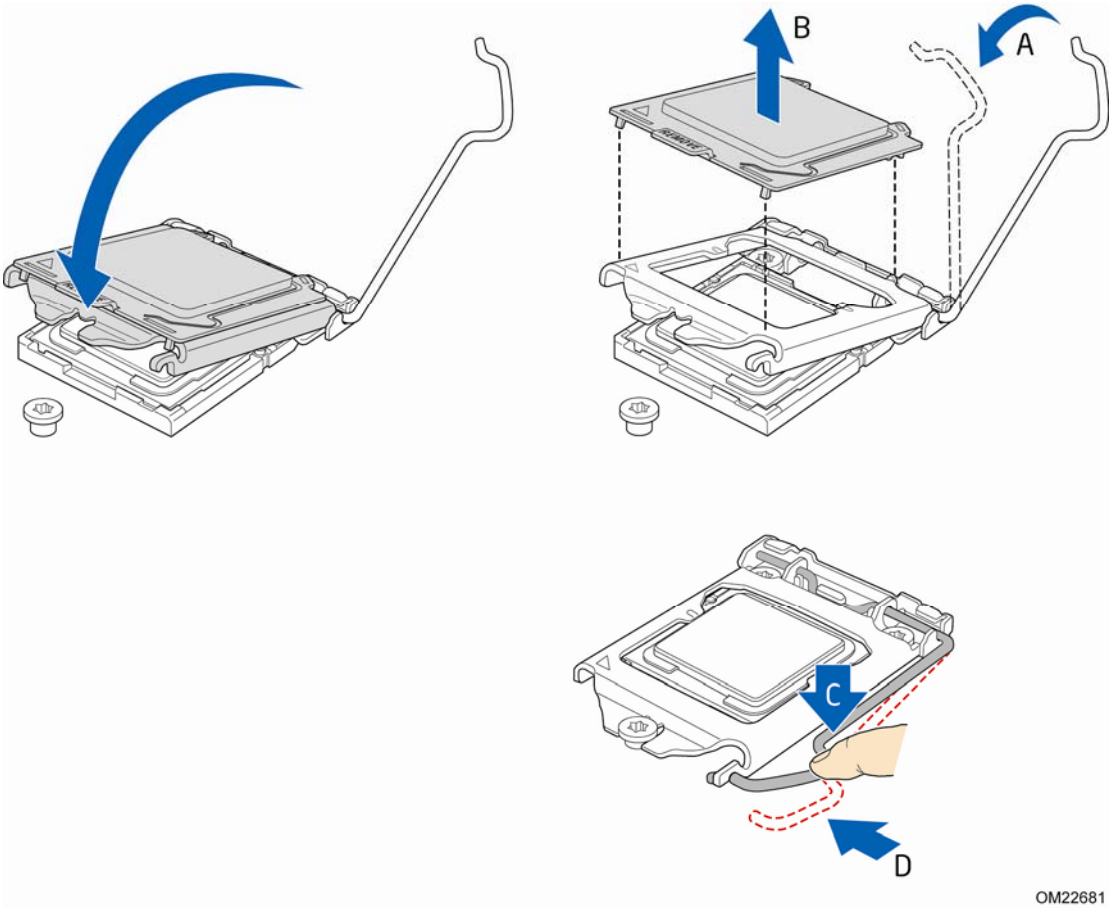


Figure 11. Secure the Load Plate in Place

7. Pick up the socket cover and remove it from the desktop board.

NOTE

Do not discard the socket cover; save it for possible future use. Always replace the socket cover if you remove the processor from the socket.

Installing a Processor Fan Heat Sink

Intel Desktop Board DH61CR has mounting holes for a processor fan heat sink. For instructions on how to attach the processor fan heat sink to the Desktop Board, refer to the boxed processor manual or boxed thermal solution manual.

Connecting the Processor Fan Heat Sink Cable

Connect the processor fan heat sink power cable to the 4-pin processor fan header (see Figure 12). A fan with a 4-pin connector as shown in Figure 12 is recommended.

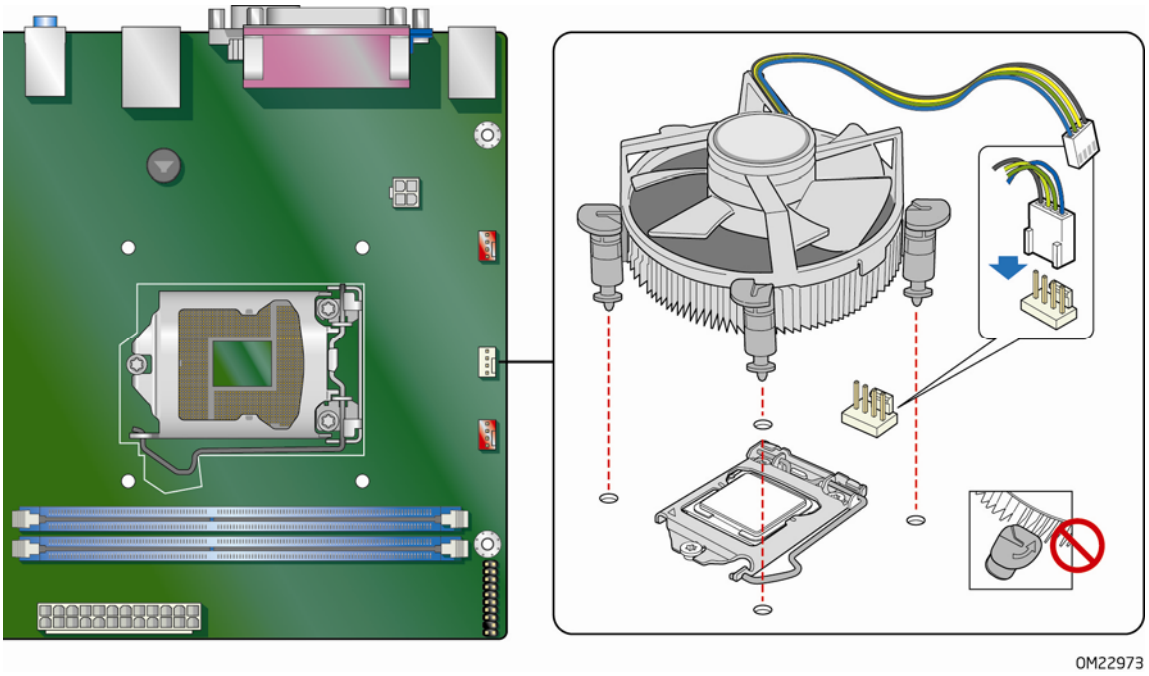


Figure 12. Connecting the Processor Fan Heat Sink Power Cable to the Processor Fan Header

Removing the Processor

For instructions on how to remove the processor fan heat sink and processor, refer to the processor installation manual.

Installing and Removing System Memory

NOTE

To be fully compliant with all applicable Intel SDRAM memory specifications, the board requires DIMMs that support the Serial Presence Detect (SPD) data structure.

The desktop board has two 240-pin DDR3 DIMM sockets providing Channel A and Channel B. For dual-channel performance, install a matched pair of DIMMs equal in speed and size (see Figure 13).

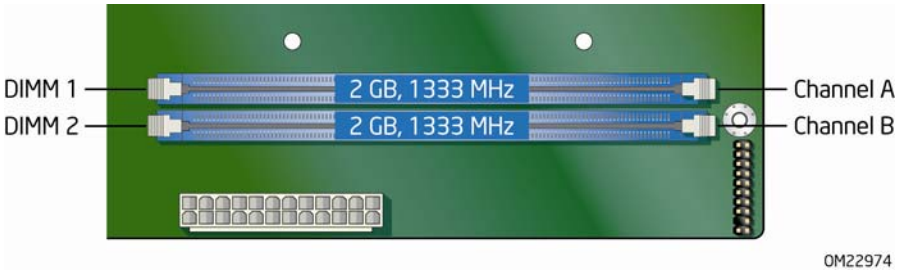


Figure 13. Dual Channel Memory Configuration Example

Installing DIMMs

To make sure you have the correct DIMM, place it on the illustration of the DDR3 DIMM in Figure 14. All the notches should match with the DDR3 DIMM.

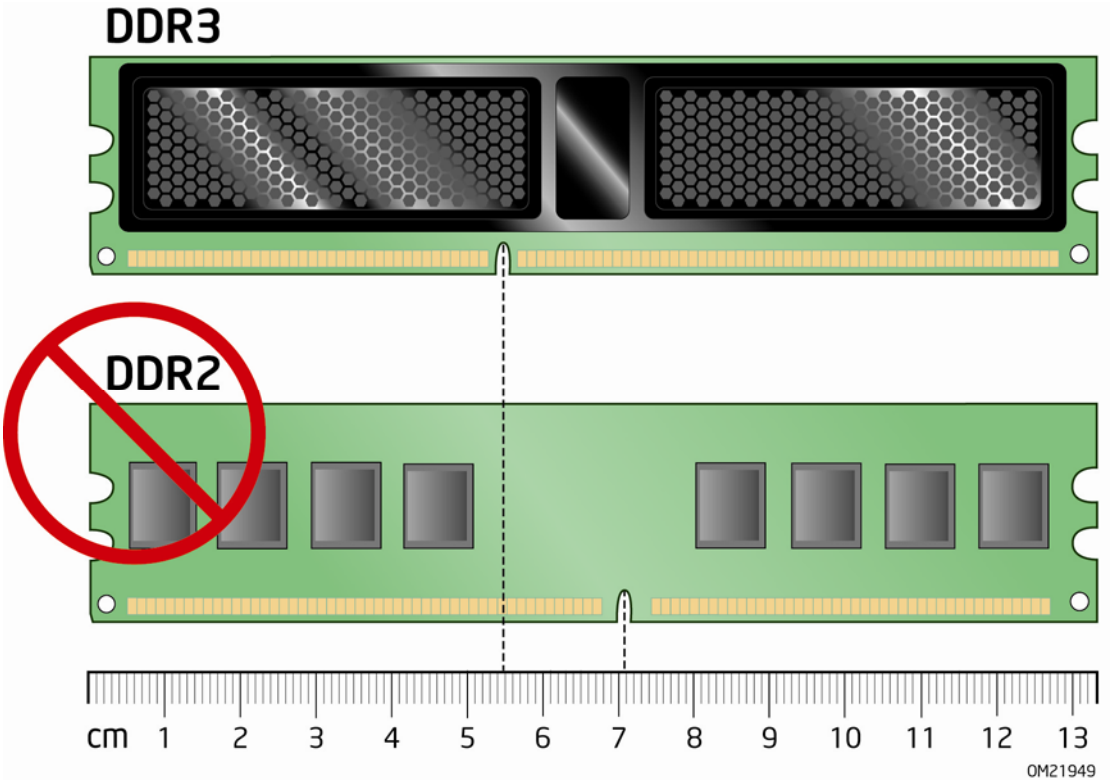


Figure 14. Use DDR3 DIMMs

To install a DIMM, follow these steps:

1. Observe the precautions in "Before You Begin" on page 29.
2. Turn off all peripheral devices connected to the computer. Turn off the computer and disconnect the AC power cord.
3. Remove the computer's cover and locate the DIMM sockets (see Figure 15).
4. If a full length PCI Express graphics card is installed in the PCI Express x16 connector, remove the card to gain full access to the DIMM sockets.

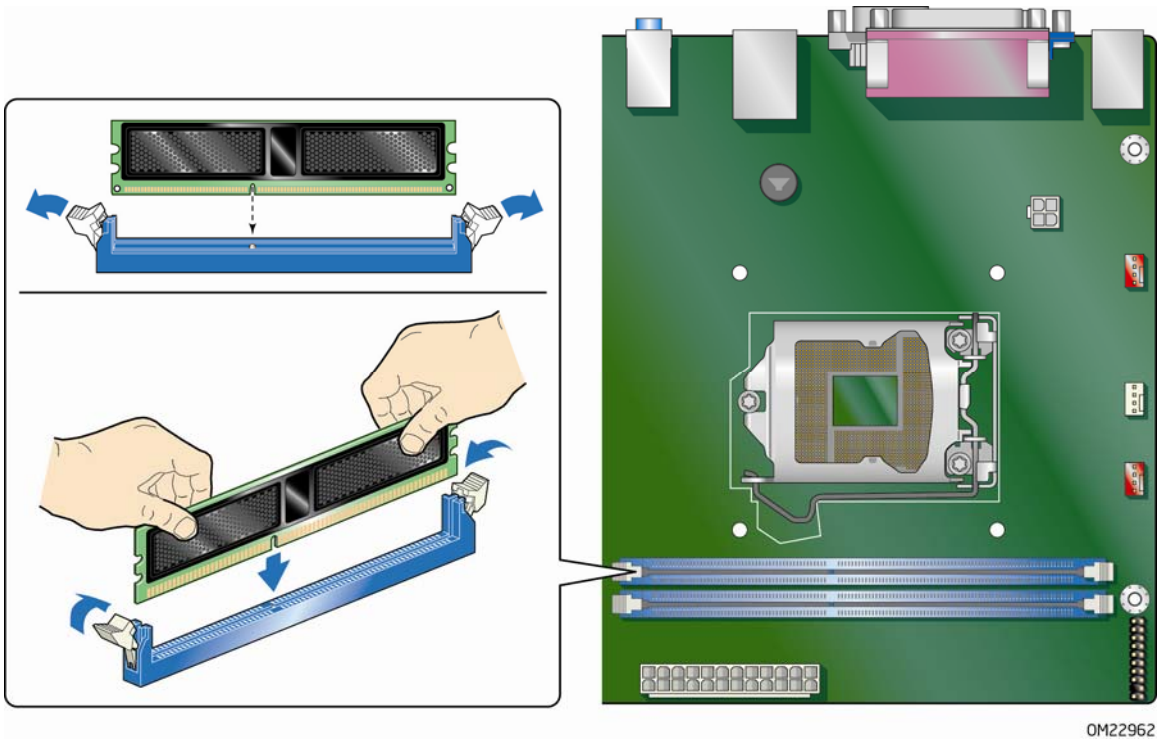


Figure 15. Installing a DIMM

5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the keys in the socket (see inset in Figure 15).
8. Insert the bottom edge of the DIMM into the socket.
9. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
10. Reinstall the PCI Express graphics card if one was removed in Step 4.
11. Replace the computer's cover and reconnect the AC power cord.

Removing DIMMs

To remove a DIMM, follow these steps:

1. Observe the precautions in "Before You Begin" on page 29.
2. Turn off all peripheral devices connected to the computer. Turn off the computer.
3. Remove the AC power cord from the computer.
4. Remove the computer's cover.
5. If a full length PCI Express graphics card is installed in the PCI Express x16 connector, remove the card to gain access to the DIMMs.
6. Gently spread the retaining clips at each end of the DIMM socket. The DIMM pops out of the socket.
7. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
8. Reinstall the PCI Express graphics card if one was removed in Step 5 and reconnect any other parts you removed or disconnected to reach the DIMMs.
9. Replace the computer's cover and reconnect the AC power cord.

Installing and Removing PCI Express x16 Graphics Cards

Installing a PCI Express x16 Graphics Card

CAUTION

Before installing a PCI Express x16 graphics card, make sure that the tabs on the DIMM sockets are in the upright position (closed); otherwise, they may be damaged by the PCI Express card during installation.

CAUTION

When installing a PCI Express card, ensure that the card is fully seated in the PCI Express connector before you power on the system. If the card is not fully seated in the connector, an electrical short may result across the connector pins. Depending on the over-current protection of the power supply, certain Desktop Board components and/or traces may be damaged.

Follow these instructions to install a PCI Express x16 graphics card:

1. Observe the precautions in "Before You Begin" on page 29.
2. Place the card in the PCI Express x16 connector (Figure 16, A) and press down on the card until it is completely seated in the connector and the card retention notch on the card snaps into place around the retention mechanism pin on the connector.
3. Secure the card's metal bracket to the chassis back panel with a screw (Figure 16, B).
4. Connect a monitor to the graphics card according to the manufacturer's instructions.

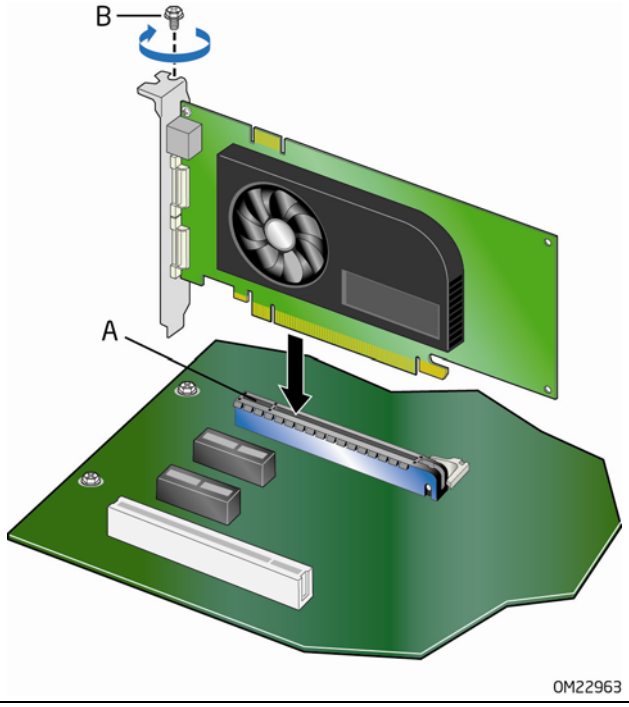


Figure 16. Installing a PCI Express x16 Graphics Card

Removing a PCI Express x16 Graphics Card

Follow these instructions to remove a PCI Express x16 graphics card from a connector:

1. Observe the precautions in "Before You Begin" on page 29.
2. Disconnect the monitor cable from the graphics card back panel connector.
3. Remove the screw (Figure 17, A) that secures the card's metal bracket to the chassis back panel.
4. Push the card ejector lever down using the tip of a pencil or similar tool (Figure 17, B) in the notch. This will release the card from the connector (C).
5. Pull the card straight up to remove it.

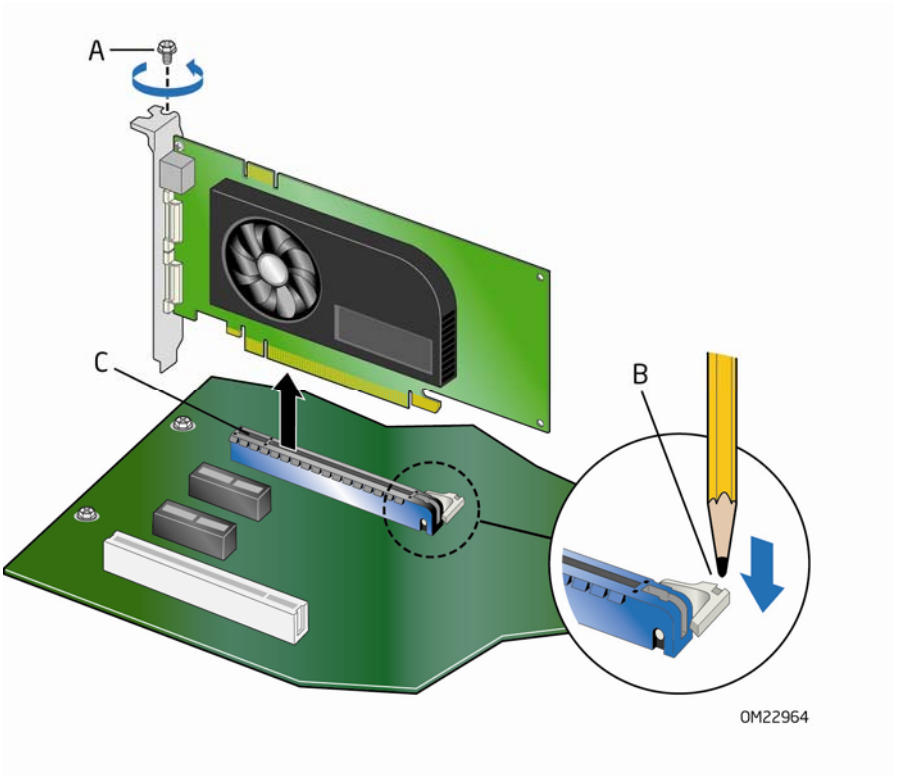


Figure 17. Removing a PCI Express x16 Graphics Card

Connecting Serial ATA (SATA) Cables

SATA cables support the Serial ATA protocol. Each cable can be used to connect one internal SATA drive to the Desktop Board. For correct cable function:

1. Observe the precautions in "Before You Begin" on page 29.
2. Attach one end of the SATA cable to one of the SATA connectors on the board (Figure 18, A) and attach the other end of the cable to the SATA drive (Figure 18, B).

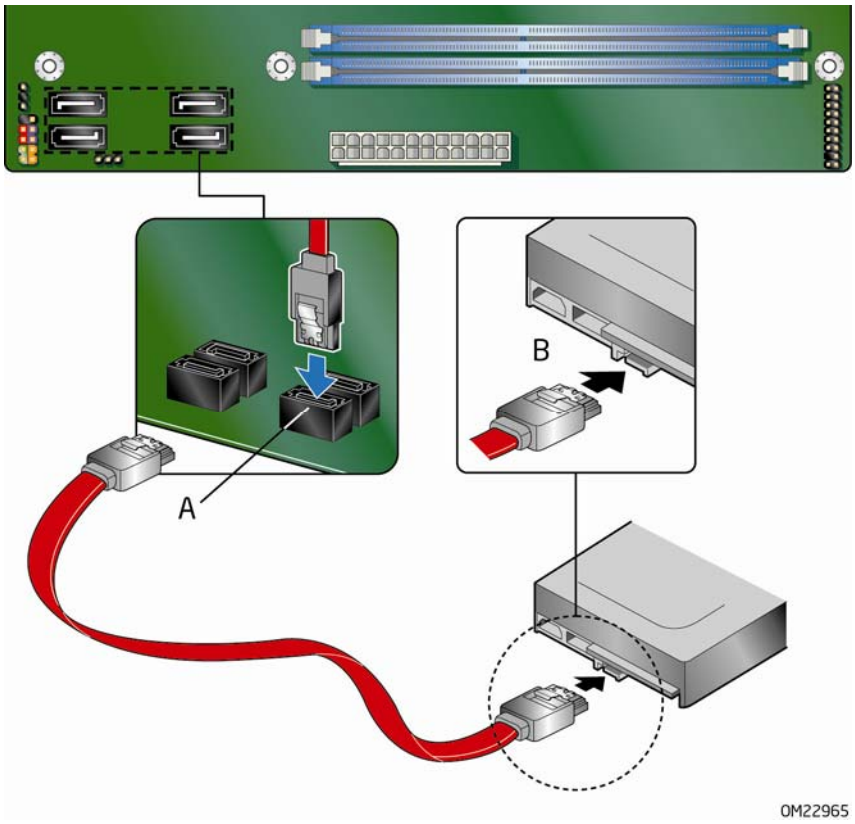


Figure 18. Connecting a Serial ATA Cable

Connecting to the Internal Headers

Before connecting cables to any of the internal headers, observe the precautions in "Before You Begin" on page 29. Figure 19 shows the location of the internal headers and connectors on Intel Desktop Board DH61CR.

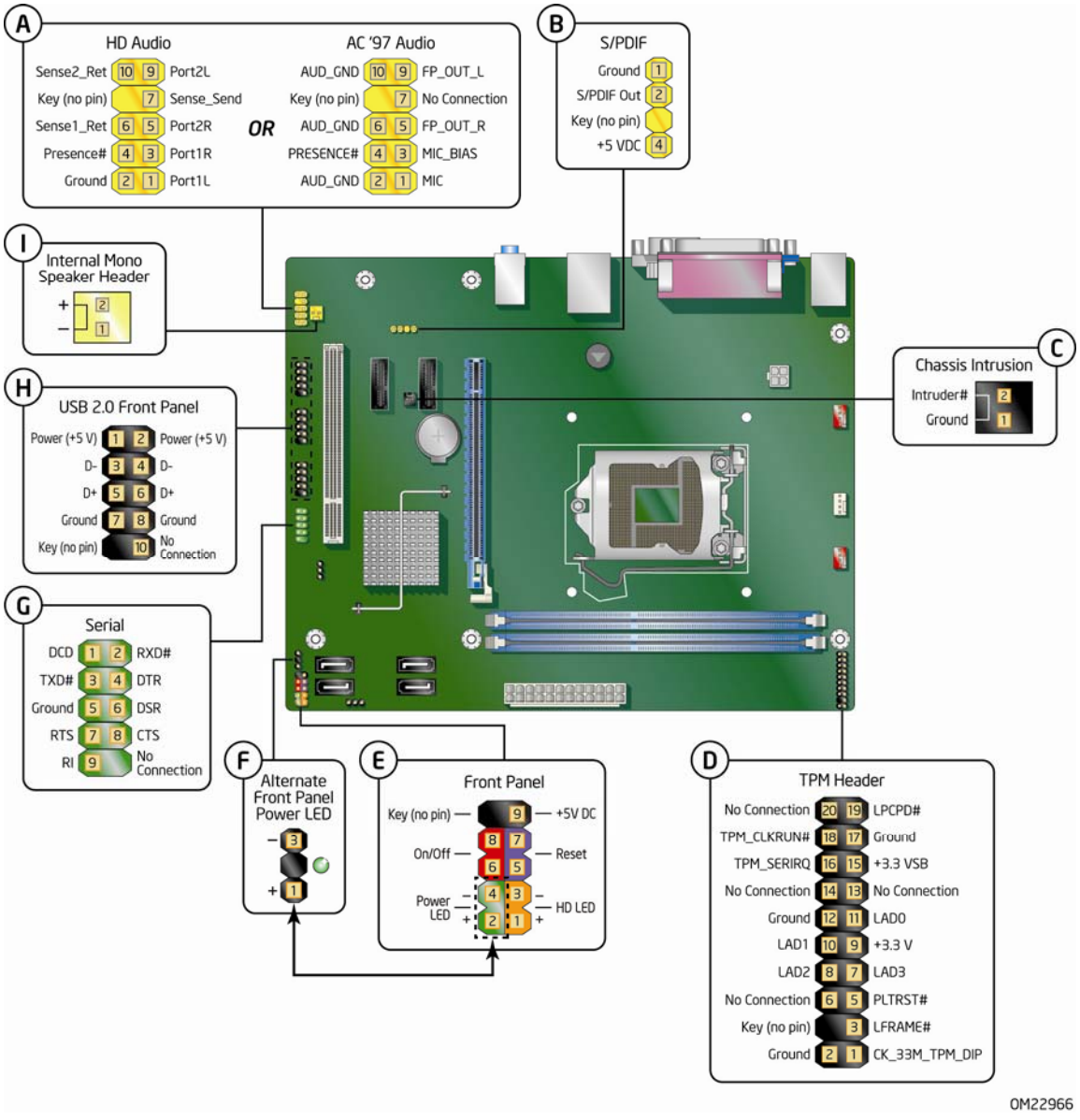


Figure 19. Internal Headers

Front Panel Audio Header

The front panel audio header shown in Figure 19, A supports both Intel High Definition Audio and AC '97 Audio.

Table 4 shows the pin assignments and signal names for HD Audio and Table 5 shows the pin assignments and signal names for AC '97 Audio.

Table 4. Front Panel Audio Signal Names for Intel HD Audio

Pin	Signal Name	Pin	Signal Name
1	PORT 1L (Microphone)	2	Ground
3	PORT 1R (Microphone)	4	PRESENCE#
5	PORT 2R (Headphone)	6	SENSE1_RETURN
7	SENSE_SEND	8	KEY (no pin)
9	PORT 2L (Headphone)	10	SENSE2_RETURN

Table 5. Front Panel Audio Header Signal Names for AC '97 Audio

Pin	Signal Name	Pin	Signal Name
1	MIC	2	AUD_GND
3	MIC_BIAS	4	PRESENCE#
5	FP_OUT_R	6	AUD_GND
7	No connection	8	KEY (no pin)
9	FP_OUT_L	10	AUD_GND

S/PDIF Header

Figure 19, B shows the location of the S/PDIF output header. Table 6 shows the pin assignments and signal names for the S/PDIF output header.

Table 6. S/PDIF Header Signal Names

Pin	Description
1	Ground
2	S/PDIF Out
3	Key (no pin)
4	+5 VDC

Chassis Intrusion Header

Figure 19, C shows the location of the chassis intrusion header. This header can be connected to a mechanical switch on the chassis to detect if the chassis cover is removed. This switch should be in the open position when the chassis cover is installed and closed when the cover is removed.

Table 7 shows the pin assignments and signal names for the chassis intrusion header.

Table 7. Chassis Intrusion Header Signal Names

Pin	Description
1	Intruder#
2	Ground

TPM Header

The TPM header is shown in Figure 19, D. Table 8 shows the pin assignments and signal names for TPM header.

Table 8. TPM Header Signal Names

Pin	Signal Name	Pin	Signal Name
1	CK_33M_TPM_DIP	2	Ground
3	LFRAME#	4	Key (no pin)
5	PLTRST#	6	No connection
7	LAD3	8	LAD2
9	+3.3 V	10	LAD1
11	LAD0	12	Ground
13	No connection	14	No connection
15	+3.3 VSB	16	TPM_SERRQ
17	Ground	18	TPM_CLKRUN#
19	LPCPD#	20	No connection

Front Panel Header

Figure 19, E shows the location of the front panel header. Table 9 shows the pin assignments and signal names for the front panel header.

Table 9. Front Panel Header Signal Names

Pin	Description	In/Out	Pin	Description	In/Out
Hard Disk Drive Activity LED			**Power LED**		
1	Hard disk LED pull-up to +5 V	Out	2	Front panel LED+	Out
3	Hard disk active LED	Out	4	Front panel LED-	Out
Reset Switch			**On/Off Switch**		
5	Ground		6	Power switch	In
7	Reset switch	In	8	Ground	
Power			**Not Connected**		
9	Power	Out	10	No pin	

NOTE

When connecting individual wires from your chassis front panel to the front panel header, be sure to observe the connection polarity. Positive wires are usually solid color and negative wires are usually white or striped.

Alternate Front Panel Power LED Header

Figure 19, F shows the location of the alternate front panel power LED header. Pins 1 and 3 of this header duplicate the signals on pins 2 and 4 of the front panel header. If your chassis has a three-pin power LED cable, connect it to this header. Table 10 shows the pin assignments for the alternate front panel header.

Table 10. Alternate Front Panel Power LED Header Signal Names

Pin	Signal Name	In/Out
1	Front panel LED+	Out
2	No pin	
3	Front panel LED-	Out

Serial Header

Figure 19, G shows the location of the serial header. Table 11 shows the pin assignments and signal names for the serial header.

Table 11. Serial Port Header Signal Names

Pin	Signal Name	Pin	Signal Name
1	DCD (Data Carrier Detect)	2	RXD# (Receive Data)
3	TXD# (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	Key (no pin)

Front Panel USB 2.0 Headers

Figure 19, H shows the location of the front panel USB 2.0 headers and Table 12 shows the pin assignments and signal names.

Table 12. Front Panel USB 2.0 Headers Signal Names

Pin	Signal Name	Pin	Signal Name
1	Power (+5 V)	2	Power (+5 V)
3	D-	4	D-
5	D+	6	D+
7	Ground	8	Ground
9	Key	10	No Connection

NOTE

Computer systems that have an unshielded cable attached to a USB port might not meet FCC Class B requirements, even if no device or a low-speed USB device is attached to the cable. Use a shielded cable that meets the requirements for a full-speed USB device.

Internal Mono Speaker Header

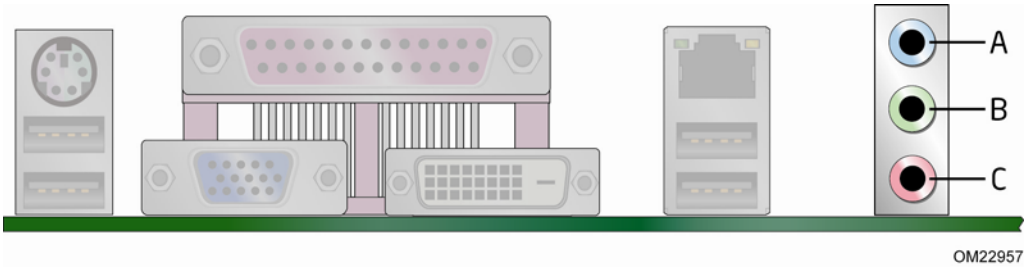
The internal mono speaker header is shown in Figure 19, I. Table 13 shows the pin assignments and signal names for the internal mono speaker header.

Table 13. Internal Mono Speaker Header Signal Names

Pin	Signal Name
1	–
2	+

Connecting to the Audio System

After installing the Realtek audio driver from the Intel® Express Installer DVD-ROM, the multi-channel audio feature can be enabled. Figure 20 shows the back panel audio connectors. The default connector assignments are shown in the table.



Item	Description
A	Line in
B	Line out (front speaker/headphones)
C	Mic in

Figure 20. Back Panel Audio Connectors

NOTE

The back panel line out connector is designed to power either headphones or amplified speakers only. Poor audio quality may occur if passive (non-amplified) speakers are connected to this output.

Connecting Chassis Fan and Power Supply Cables

Connecting Chassis Fan Cables

Connect chassis fan cables to the chassis fan headers on the Desktop Board. Figure 21 shows the location of the chassis fan headers.

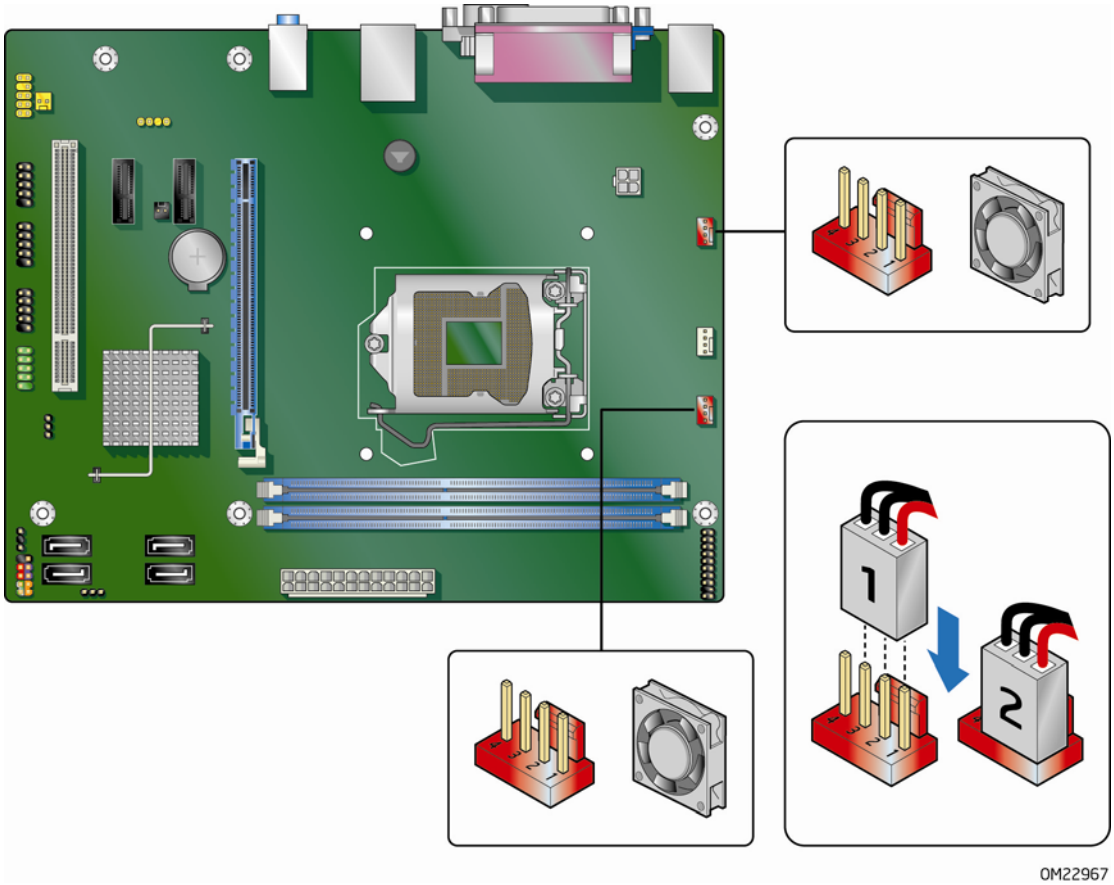


Figure 21. Location of the Chassis Fan Headers

Connecting Power Supply Cables

CAUTION

Failure to use an appropriate power supply and/or not connecting the 12 V power connector (Figure 22, A) to the Desktop Board may result in damage to the board or the system may not function properly.

Figure 22 shows the location of the power connectors. The 2 x 12 pin main power connector (Figure 22, B) is backwards compatible with ATX12V power supplies with 2 x 10 connectors.

NOTE

If your power supply has a 2 x 10 main power connector, it is recommended that you do not install a PCI Express x16 graphics card unless it has a direct connection to the power supply.

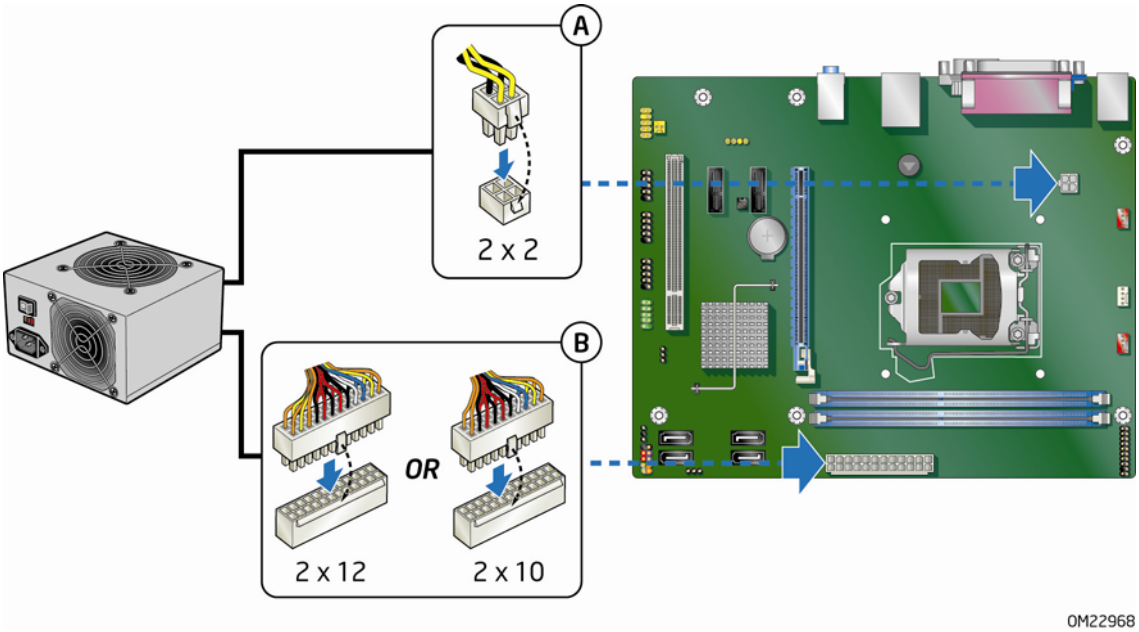


Figure 22. Connecting Power Supply Cables

1. Observe the precautions in "Before You Begin" on page 29.
2. Connect the 12 V processor core voltage power supply cable to the 2 x 2 pin connector (Figure 22, A).
3. Connect the main power supply cable to the 2 x 12 pin connector (Figure 22, B).

Setting the BIOS Configuration Jumper

NOTE

Always turn off the power to the computer before moving the jumper. Moving the jumper with the power on may result in unreliable computer operation.

Figure 23 shows the location of the Desktop Board's BIOS configuration jumper block.

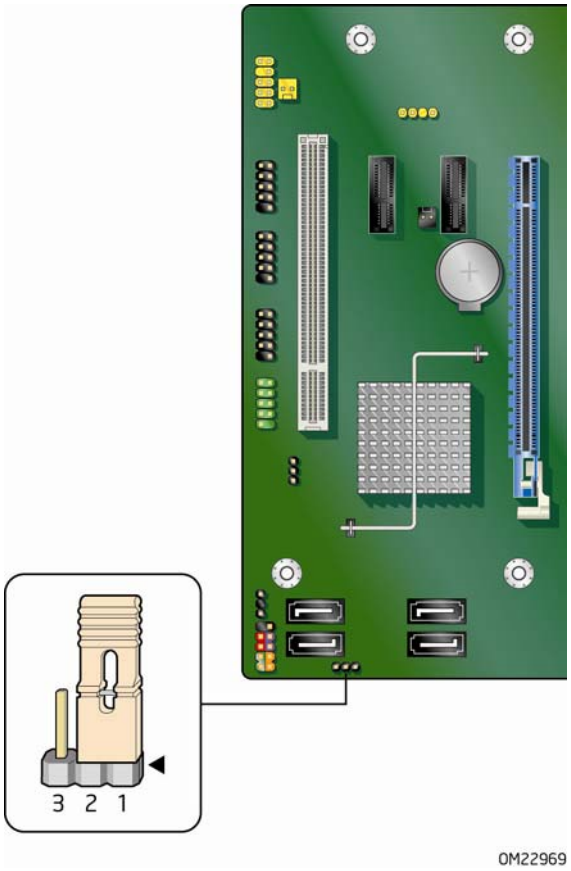
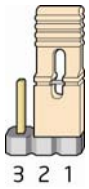
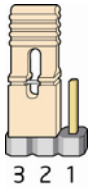
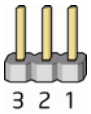


Figure 23. Location of the BIOS Configuration Jumper Block

The three-pin BIOS jumper block enables board configuration to be done in the BIOS Setup program. Table 14 shows the jumper settings for the BIOS Setup program modes.

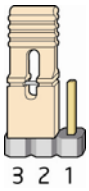
Table 14. Jumper Settings for the BIOS Setup Program Modes

Jumper Setting	Mode	Description
	Normal (default) (1-2)	The BIOS uses the current configuration and passwords for booting.
	Configure (2-3)	After the Power-On Self-Test (POST) runs, the BIOS displays the Maintenance Menu. Use this menu to clear passwords.
	Recovery (None)	The BIOS recovers data in the event of a failed BIOS update.

Clearing Passwords in the BIOS Setup Program

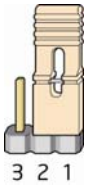
This procedure assumes that the board is installed in the computer and the configuration jumper block is set to normal mode.

1. Observe the precautions in "Before You Begin" on page 29.
2. Turn off all peripheral devices connected to the computer. Turn off the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
3. Remove the computer cover.
4. Find the configuration jumper block (see Figure 23).
5. Place the jumper on pins 2-3 as shown below.



6. Replace the cover, plug in the computer, turn on the computer, and allow it to boot.
7. The computer starts the Setup program. Setup displays the Maintenance menu.

8. Use the arrow keys to select Clear Passwords. Press <Enter> and Setup displays a pop-up screen requesting that you confirm clearing the password. Select Yes and press <Enter>. Setup displays the maintenance menu again.
9. Press <F10> to save the current values and exit Setup.
10. Turn off the computer. Disconnect the computer's power cord from the AC power source.
11. Remove the computer cover.
12. To restore normal operation, place the jumper on pins 1-2 as shown below.



13. Replace the cover, plug in the computer, and turn on the computer.

Replacing the Battery

A coin-cell battery (CR2032) powers the real-time clock and CMOS memory. When the computer is not plugged into a wall socket, the battery has an estimated life of three years. When the computer is plugged in, the standby current from the power supply extends the life of the battery. The clock is accurate to ± 13 minutes/year at 25 ºC with 3.3 VSB applied.

When the voltage drops below a certain level, the BIOS Setup program settings stored in CMOS RAM (for example, the date and time) might not be accurate. Replace the battery with an equivalent one. Figure 24 on page 60 shows the location of the battery.

CAUTION

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

PRÉCAUTION

Risque d'explosion si la pile usagée est remplacée par une pile de type incorrect. Les piles usagées doivent être recyclées dans la mesure du possible. La mise au rebut des piles usagées doit respecter les réglementations locales en vigueur en matière de protection de l'environnement.

FORHOLDSREGEL

Eksplosionsfare, hvis batteriet erstattes med et batteri af en forkert type. Batterier bør om muligt genbruges. Bortskaffelse af brugte batterier bør foregå i overensstemmelse med gældende miljølovgivning.

OBS!

Det kan oppstå eksplosjonsfare hvis batteriet skiftes ut med feil type. Brukte batterier bør kastes i henhold til gjeldende miljølovgivning.

VIKTIGT!

Risk för explosion om batteriet ersätts med felaktig batterityp. Batterier ska kasseras enligt de lokala miljövårdsbestämmelserna.

VARO

Räjähdysvaara, jos pariston tyyppi on väärä. Paristot on kierrätettävä, jos se on mahdollista. Käytetyt paristot on hävitettävä paikallisten ympäristömääräysten mukaisesti.

VORSICHT

Bei falschem Einsetzen einer neuen Batterie besteht Explosionsgefahr. Die Batterie darf nur durch denselben oder einen entsprechenden, vom Hersteller empfohlenen Batterietyp ersetzt werden. Entsorgen Sie verbrauchte Batterien den Anweisungen des Herstellers entsprechend.

AVVERTIMENTO

Esiste il pericolo di un esplosione se la pila non viene sostituita in modo corretto. Utilizzare solo pile uguali o di tipo equivalente a quelle consigliate dal produttore. Per disfarsi delle pile usate, seguire le istruzioni del produttore.

PRECAUCIÓN

Existe peligro de explosión si la pila no se cambia de forma adecuada. Utilice solamente pilas iguales o del mismo tipo que las recomendadas por el fabricante del equipo. Para deshacerse de las pilas usadas, siga igualmente las instrucciones del fabricante.

WAARSCHUWING

Er bestaat ontploffingsgevaar als de batterij wordt vervangen door een onjuist type batterij. Batterijen moeten zoveel mogelijk worden gerecycled. Houd u bij het weggooien van gebruikte batterijen aan de plaatselijke milieuwetgeving.

ATENÇÃO

Haverá risco de explosão se a bateria for substituída por um tipo de bateria incorreto. As baterias devem ser recicladas nos locais apropriados. A eliminação de baterias usadas deve ser feita de acordo com as regulamentações ambientais da região.

AŚCIAROŽZNAŚĆ

Існуе рызыка выбуху, калі заменены акумулятар неправільнага тыпу. Акумулятары павінны, па магчымасці, перепрацоўвацца. Пазбаўляцца ад старых акумулятараў патрэбна згодна з мясцовым заканадаўствам па экалогіі.

UPOZORNÌNÍ

V případě výměny baterie za nesprávný druh může dojít k výbuchu. Je-li to možné, baterie by měly být recyklovány. Baterie je třeba zlikvidovat v souladu s místními předpisy o životním prostředí.

Προσοχή

Υπάρχει κίνδυνος για έκρηξη σε περίπτωση που η μπαταρία αντικατασταθεί από μία λανθασμένου τύπου. Οι μπαταρίες θα πρέπει να ανακυκλώνονται όταν κάτι τέτοιο είναι δυνατό. Η απόρριψη των χρησιμοποιημένων μπαταριών πρέπει να γίνεται σύμφωνα με τους κατά τόπο περιβαλλοντικούς κανονισμούς.

VIGYÁZAT

Ha a telepet nem a megfelelő típusú telepre cseréli, az felrobbanhat. A telepeket lehetőség szerint újra kell hasznosítani. A használt telepeket a helyi környezetvédelmi előírásoknak megfelelően kell kiselejtezni.

注意

異なる種類の電池を使用すると、爆発の危険があります。リサイクル
が可能な地域であれば、電池をリサイクルしてください。使用後の電
池を破棄する際には、地域の環境規制に従ってください。

AWAS

Risiko letupan wujud jika bateri digantikan dengan jenis yang tidak betul. Bateri sepatutnya dikitar semula jika boleh. Pelupusan bateri terpakai mestilah mematuhi peraturan alam sekitar tempatan.

OSTRZEŻENIE

Istnieje niebezpieczeństwo wybuchu w przypadku zastosowania niewłaściwego typu baterii. Zużyte baterie należy w miarę możliwości utylizować zgodnie z odpowiednimi przepisami ochrony środowiska.

PRECAUŢIE

Risc de explozie, dacă bateria este înlocuită cu un tip de baterie necorespunzător. Bateriile trebuie reciclate, dacă este posibil. Depozitarea bateriilor uzate trebuie să respecte reglementările locale privind protecţia mediului.

ВНИМАНИЕ

При использовании батареи несоответствующего типа существует риск ее взрыва. Батареи должны быть утилизированы по возможности. Утилизация батарей должна проводится по правилам, соответствующим местным требованиям.

UPOZORNENIE

Ak batériu vymeníte za nesprávny typ, hrozí nebezpečenstvo jej výbuchu. Batérie by sa mali podľa možnosti vždy recyklovať. Likvidácia použitých batérií sa musí vykonávať v súlade s miestnymi predpismi na ochranu životného prostredia.

POZOR

Zamenjava baterije z baterijo drugačnega tipa lahko povzroči eksplozijo.
Če je mogoče, baterije reciklirajte. Rabljene baterije zavrzite v skladu z lokalnimi okoljevarstvenimi predpisi.

คำเตือน

ระวังการระเบิดที่เกิดจากเปลี่ยนแบตเตอรี่ผิดประเภท หากเป็นไปได้ ควรนำแบตเตอรี่ไปรีไซเคิล การทิ้งแบตเตอรี่ใช้แล้วต้องเป็นไปตามกฎข้อบังคับด้านสิ่งแวดล้อมของท้องถิ่น.

UYARI

Yanlış türde pil takıldığında patlama riski vardır. Piller mümkün olduğunda geri dönüştürülmelidir. Kullanılmış piller, yerel çevre yasalarına uygun olarak atılmalıdır.

ОСТОРОГА

Використовуйте батареї правильного типу, інакше існуватиме ризик вибуху. Якщо можливо, використані батареї слід утилізувати. Утилізація використаних батарей має бути виконана згідно місцевих норм, що регулюють охорону довкілля.

UPOZORNĚNÍ

V případě výměny baterie za nesprávný druh může dojít k výbuchu. Je-li to možné, baterie by měly být recyklovány. Baterie je třeba zlikvidovat v souladu s místními předpisy o životním prostředí.

ETTEVAATUST

Kui patarei asendatakse uue ebasobivat tüüpi patareiga, võib tekkida plahvatusoht. Tühjad patareid tuleb võimaluse korral viia vastavasse kogumispunkti. Tühjade patareide äraviskamisel tuleb järgida kohalikke keskkonnakaitse alaseid reegleid.

FIGYELMEZTETÉS

Ha az elemet nem a megfelelő típusúra cseréli, felrobbanhat. Az elemeket lehetőség szerint újra kell hasznosítani. A használt elemeket a helyi környezetvédelmi előírásoknak megfelelően kell kiselejtezni.

UZMANĪBU

Pastāv eksplozijas risks, ja baterijas tiek nomainītas ar nepareiza veida baterijām. Ja iespējams, baterijas vajadzētu nodot attiecīgos pieņemšanas punktos. Bateriju izmešanai atkritumos jānotiek saskaņā ar vietējiem vides aizsardzības noteikumiem.

DĖMESIO

Naudojant netinkamo tipo baterijas įrenginys gali sprogti. Kai tik įmanoma, baterijas reikia naudoti pakartotinai. Panaudotas baterijas išmesti būtina pagal vietinius aplinkos apsaugos nuostatus.

ATTENZJONI

Riskju ta' splużjoni jekk il-batterija tinbidel b'tip ta' batterija mhux korrett. Il-batteriji għandhom jiġu riċiklati fejn hu possibbli. Ir-rimi ta' batteriji użati għandu jsir skond ir-regolamenti ambjentali lokali.

OSTRZEŻENIE

Ryzyko wybuchu w przypadku wymiany na baterie niewłaściwego typu. W miarę możliwości baterie należy poddać recyklingowi. Zużytych baterii należy pozbywać się zgodnie z lokalnie obowiązującymi przepisami w zakresie ochrony środowiska.

To replace the battery, follow these steps:

1. Observe the precautions in "Before You Begin" (see page 29).
2. Turn off all peripheral devices connected to the computer. Disconnect the computer's power cord from the AC power source (wall outlet or power adapter).
3. Remove the computer cover.
4. Locate the battery on the board (see Figure 24).
5. With a medium flat-bladed screwdriver, gently pry the battery free from its connector. Note the orientation of the "+" and "-" on the battery.
6. Install the new battery in the connector, orienting the "+" and "-" correctly.
7. Replace the computer cover.

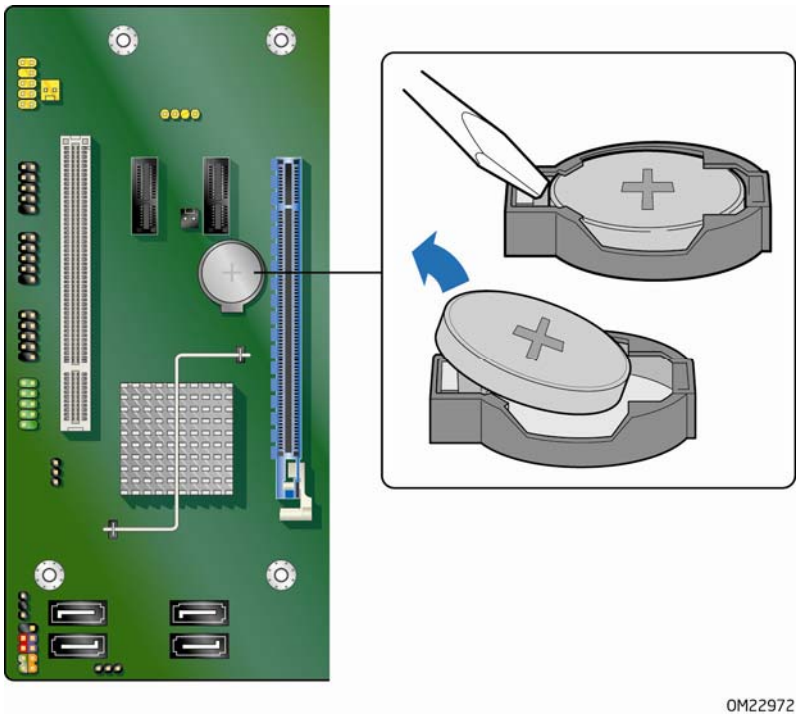


Figure 24. Removing the Battery

3 Updating the BIOS

The BIOS Setup program can be used to view and change the BIOS settings for the computer. You can access the BIOS Setup program by pressing the <F2> key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins.

This chapter tells you how to update the BIOS by either using the Intel Express BIOS Update utility or the Intel® Flash Memory Update Utility, and how to recover the BIOS if an update fails.

Updating the BIOS with the Intel® Express BIOS Update Utility

With the Intel Express BIOS Update utility you can update the system BIOS while in the Windows environment. The BIOS file is included in an automated update utility that combines the functionality of the Intel Flash Memory Update Utility and the ease of use of Windows-based installation wizards.

To update the BIOS with the Intel Express BIOS Update utility:

1. Go to the Intel World Wide Web site Download Center at http://downloadcenter.intel.com/
2. Navigate to the DH61CR page. Click on the "BIOS Update" link and then select the Express BIOS Update file.
3. Download the file to your hard drive. (You can also save this file to a removable USB device. This is useful if you are updating the BIOS for multiple identical systems.)
4. Close all other applications. This step is required. Your system will be rebooted at the last Express BIOS Update window.
5. Double-click the executable file from the location on your hard drive where it was saved. This runs the update program.
6. Follow the instructions provided in the dialog boxes to complete the BIOS update.

Updating the BIOS Using the F7 Function Key

To use this BIOS update method:

1. Download and save the Recovery BIOS (.BIO) file to a temporary directory.
2. Copy the .BIO file to a USB thumb drive. The USB thumb drive does not need to be bootable, only formatted. FAT16, FAT32, and NTFS formats are supported.
3. Plug the thumb drive into a USB port of the target computer.
4. Shut down the target computer.
5. Enable the F7 prompt display:
   a. Power the computer on.
   b. Enter the BIOS Setup by pressing F2 during boot.
   c. Go to the Advanced > Boot Configuration menu.
   d. Enable Display F7 to Update BIOS
   e. Press F10 to save and exit.
6. During boot, when the F7 prompt is displayed, press F7 to enter the BIOS Flash Update tool.
7. Select the USB thumb drive and press Enter.
8. Select the .BIO file and press Enter.
9. Confirm you want to update the BIOS by pressing Enter.
10. Wait 2-5 minutes for the update to complete.
11. Remove the thumb drive.
12. Restart the computer.

Updating the BIOS with the ISO Image BIOS Update File or the Intel® Flash Memory Update Utility

You can use the information in this section to update the BIOS using either the Intel Flash Memory Update Utility or the ISO Image BIOS update file.

Obtaining the BIOS Update File

You can update to a new version of the BIOS by using the ISO Image BIOS update file (recommended), or Intel Flash Memory BIOS update file.

The ISO Image BIOS update file is a standardized image of a bootable CD-ROM that can be used to create a bootable CD that will update the BIOS.

The Intel Flash Memory BIOS update file is a compressed file that contains the files you need to update the BIOS. The BIOS update file contains:

- New BIOS file (including the Intel® Management Engine (Intel® ME) Firmware Image))
- Intel® Integrator Toolkit Configuration File (optional)
- Intel Flash Memory Update Utility

You can obtain either of these files through your computer supplier or by navigating to the Intel Desktop Board DH61CR page on the Intel World Wide Web site Download Center at http://downloadcenter.intel.com.

On the DH61CR page, click on the "BIOS Update" link and then select the the Iflash BIOS Update file.

Updating the BIOS with the Intel Flash Memory Update Utility

With the Intel Flash Memory Update Utility you can update the system BIOS from a bootable CD-ROM, bootable USB flash drive, or other bootable USB media. The utility available on the Intel World Wide Web site provides a simple method for creating a bootable CD-ROM that will automatically update your BIOS. The BIOS update files can also be extracted locally to your hard drive and copied to a bootable USB flash drive or other bootable USB media.

The Intel Flash Memory Update Utility allows you to:

- Update the BIOS and Intel Management Engine in flash memory
- Update the language section of the BIOS

NOTE

Review the instructions distributed with the update utility before attempting a BIOS update.

CAUTION

Do not interrupt the process or the system may not function properly.

1. Uncompress the BIOS update file and copy the .BIO file, IFLASH.EXE, and .ITK file (optional) to a bootable USB flash drive or other bootable USB media.
2. Configure the BIOS or use the F10 option during POST to boot to the USB device.
3. Manually run the IFLASH.EXE file from the USB device and manually update the BIOS.

Updating the BIOS with the ISO Image BIOS Update File

The ISO Image BIOS update allows for the update of an Intel® Desktop Board BIOS to the latest production release regardless of the operating system installed on the computer's hard drive and without the need to remove the BIOS configuration jumper. It requires a blank CD-R, a read/writeable CD drive, and software capable of uncompressing and writing the ISO image file to CD.

The image uses ISOLINUX* bootloader and automatically launches a script to upgrade the BIOS via the Intel Flash Memory Utility.

CAUTION

Do not interrupt the process or the system may not function properly.

Follow these instructions to upgrade the BIOS using the ISO Image BIOS file:

1. Download the ISO Image BIOS file.
2. Using software capable of uncompressing and writing an ISO image file to CD, burn the data to a blank CD.

NOTE

Copying the ISO Image BIOS file to CD will not work. The completed CD should contain multiple files and a directory.

3. Insert the CD that was created in the CD-ROM drive of the computer to be upgraded and boot the system.
4. When the "Press ENTER to continue booting from CD-ROM" prompt appears, press the Enter key. The system will boot from the hard drive if no key is pressed within 15 seconds.
5. At the "Welcome to the Intel Desktop Board BIOS Upgrade CD-ROM" page, press any key to confirm the BIOS upgrade operation.
6. Wait for the BIOS upgrade process to complete.

CAUTION

DO NOT POWER DOWN YOUR COMPUTER before the update is complete. The update may take up to 5 minutes.

Recovering the BIOS

It is unlikely that anything will interrupt the BIOS update; however, if an interruption occurs, the BIOS could be damaged. Due to BIOS size and recovery requirements, a CD-R with the .BIO file in the root directory will be required.

You can obtain the Recovery BIOS Update file through your computer supplier or by navigating to the Intel Desktop Board DH61CR page on the Intel World Wide Web site Download Center at http://downloadcenter.intel.com.

On the DH61CR page, click on the "BIOS Update" link and then select the Recovery BIOS Update file.

NOTE

For more information about updating the Intel Desktop Board BIOS or recovering from a BIOS update failure, go to http://support.intel.com/support/motherboards/desktop/sb/CS-022312.htm.

A Error Messages and Indicators

Intel Desktop Board DH61CR reports POST errors in two ways:

- By sounding a beep code and blinking the front panel power LED
- By displaying an error message on the monitor

BIOS Error Codes

Whenever a recoverable error occurs during POST, the BIOS causes the board's speaker to beep and the front panel power LED to blink an error message indicating the problem (see Table 15).

Table 15. BIOS Beep Codes

Type	Pattern	Frequency/Comments
F2 Setup/F10 Boot Menu Prompt	One 0.5 second beep when the BIOS is ready to accept keyboard input	932 Hz
BIOS update in progress	None	
Video error (no add-in graphics card installed)	On-off (1.0 second each) two times, then a 2.5-second pause (off), the entire pattern repeats (beeps and pause) once and the BIOS will continue to boot.	932 Hz For processors requiring an add-in graphics card
Memory error	On-off (1.0 second each) three times, then a 2.5-second pause (off), the entire pattern repeats (beeps and pause) until the system is powered off.	932 Hz
Thermal trip warning	Alternate high and low beeps (1.0 second each) for eight beeps followed by system shut down.	High beep 2000 Hz Low beep 1500 Hz

Table 16. Front-panel Power LED Blink Codes

Type	Pattern	Note
F2 Setup/F10 Boot Menu Prompt	None	
BIOS update in progress	Off when the update begins, then on for 0.5 seconds, then off for 0.5 seconds. The pattern repeats until the BIOS update is complete.	
Video error (no add-in graphics card installed)	On-off (1.0 second each) two times, then a 2.5-second pause (off), the entire pattern repeats (blink and pause) until the system is powered off.	For processors requiring an add-in graphics card
Memory error	On-off (1.0 second each) three times, then a 2.5-second pause (off), the entire pattern repeats (blinks and pause) until the system is powered off.	
Thermal trip warning	Each beep will be accompanied by the following blink pattern: .25 seconds on, .25 seconds off, .25 seconds on, .25 seconds off. This results in a total of 16 blinks.	

BIOS Error Messages

When a recoverable error occurs during the POST, the BIOS displays an error message describing the problem. Table 17 gives an explanation of the BIOS error messages.

Table 17. BIOS Error Messages

Error Message	Explanation
CMOS Battery Low	The battery may be losing power. Replace the battery soon.
CMOS Checksum Bad	The CMOS checksum is incorrect. CMOS memory may have been corrupted. Run Setup to reset values.
Memory Size Decreased	Memory size has decreased since the last boot. If no memory was removed, then memory may be bad.
No Boot Device Available	System did not find a device to boot.

B Regulatory Compliance

This appendix contains the following regulatory compliance information for Intel Desktop Board DH61CR:

- Safety standards
- European Union Declaration of Conformity statement
- Product Ecology statements
- Electromagnetic Compatibility (EMC) regulations
- Product certifications

Safety Standards

Intel Desktop Board DH61CR complies with the safety standards stated in Table 18 when correctly installed in a compatible host system.

Table 18. Safety Standards

Regulation	Title
CSA/UL 60950-1	Information Technology Equipment – Safety - Part 1: General Requirements (USA and Canada)
EN 60950-1	Information Technology Equipment – Safety - Part 1: General Requirements (European Union)
IEC 60950-1	Information Technology Equipment – Safety - Part 1: General Requirements (International)

Battery Caution

There is insufficient space on this Desktop Board to provide instructions for replacing and disposing of the Lithium ion coin cell battery. For system safety certification, the statement below or an equivalent statement is required to be permanently and legibly marked on the chassis near the battery.

A suitable caution label is included with Intel Desktop Board DH61CR.

CAUTION

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

For information about replacing the battery, go to page 55.

European Union Declaration of Conformity Statement

We, Intel Corporation, declare under our sole responsibility that the product Intel® Desktop Board DH61CR is in conformity with all applicable essential requirements necessary for CE marking, following the provisions of the European Council Directives 2004/108/EC (EMC Directive), 2006/95/EC (Low Voltage Directive), and 2002/95/EC (ROHS Directive).

The product is properly CE marked demonstrating this conformity and is for distribution within all member states of the EU with no restrictions.

This product follows the provisions of the European Directives 2004/108/EC, 2006/95/EC and 2002/95/EC.

Čeština Tento výrobek odpovídá požadavkům evropských směrnic 2004/108/EC, 2006/95/EC a 2002/95/EC.

Dansk Dette produkt er i overensstemmelse med det europæiske direktiv 2004/108/EC, 2006/95/EC & 2002/95/EC.

Dutch Dit product is in navolging van de bepalingen van Europees Directief 2004/108/EC, 2006/95/EC & 2002/95/EC.

Eesti Antud toode vastab Euroopa direktiivides 2004/108/EC, ja 2006/95/EC ja 2002/95/EC kehtestatud nõuetele.

Suomi Tämä tuote noudattaa EU-direktiivin 2004/108/EC, 2006/95/EC & 2002/95/EC määräyksiä.

Français Ce produit est conforme aux exigences de la Directive Européenne 2004/108/EC, 2006/95/EC & 2002/95/EC.

Deutsch Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 2004/108/EC, 2006/95/EC & 2002/95/EC.

Ελληνικά Το παρόν προϊόν ακολουθεί τις διατάξεις των Ευρωπαϊκών Οδηγιών 2004/108/EC, 2006/95/EC και 2002/95/EC.

Magyar E termék megfelel a 2004/108/EC, 2006/95/EC és 2002/95/EC Európai Irányelv előírásainak.

Icelandic Þessi vara stenst reglugerð Evrópska Efnahags Bandalagsins númer 2004/108/EC, 2006/95/EC, & 2002/95/EC.

Italiano Questo prodotto è conforme alla Direttiva Europea 2004/108/EC, 2006/95/EC & 2002/95/EC.

Latviešu Šis produkts atbilst Eiropas Direktīvu 2004/108/EC, 2006/95/EC un 2002/95/EC noteikumiem.

Lietuvių Šis produktas atitinka Europos direktyvų 2004/108/EC, 2006/95/EC, ir 2002/95/EC nuostatas.

Malti Dan il-prodott hu konformi mal-provvedimenti tad-Direttivi Ewropej 2004/108/EC, 2006/95/EC u 2002/95/EC.

Norsk Dette produktet er i henhold til bestemmelsene i det europeiske direktivet 2004/108/EC, 2006/95/EC & 2002/95/EC.

Polski Niniejszy produkt jest zgodny z postanowieniami Dyrektyw Unii Europejskiej 2004/108/EC, 206/95/EC i 2002/95/EC.

Portuguese Este produto cumpre com as normas da Diretiva Européia 2004/108/EC, 2006/95/EC & 2002/95/EC.

Español Este producto cumple con las normas del Directivo Europeo 2004/108/EC, 2006/95/EC & 2002/95/EC.

Slovensky Tento produkt je v súlade s ustanoveniami európskych direktív 2004/108/EC, 2006/95/EC a 2002/95/EC.

Slovenščina Izdelek je skladen z določbami evropskih direktiv 2004/108/EC, 2006/95/EC in 2002/95/EC.

Svenska Denna produkt har tillverkats i enlighet med EG-direktiv 2004/108/EC, 2006/95/EC & 2002/95/EC.

Türkçe Bu ürün, Avrupa Birliği'nin 2004/108/EC, 2006/95/EC ve 2002/95/EC yönergelerine uyar.

Product Ecology Statements

The following information is provided to address worldwide product ecology concerns and regulations.

Recycling Considerations

As part of its commitment to environmental responsibility, Intel has implemented the Intel® Product Recycling Program to allow retail consumers of Intel's branded products to return used products to selected locations for proper recycling.

Please consult http://intel.com/intel/other/ehs/product_ecology
for the details of this program, including the scope of covered products, available locations, shipping instructions, terms and conditions, etc.

中文

作为其对环境责任之承诺的部分，英特尔已实施 Intel Product Recycling Program （英特尔产品回收计划），以允许英特尔品牌产品的零售消费者将使用过的产品退还至指定地点作恰当的重复使用处理。

请参考http://intel.com/intel/other/ehs/product_ecology
了解此计划的详情，包括涉及产品之范围、回收地点、运送指导、条款和条件等。

Deutsch

Als Teil von Intels Engagement für den Umweltschutz hat das Unternehmen das Intel Produkt-Recyclingprogramm implementiert, das Einzelhandelskunden von Intel Markenprodukten ermöglicht, gebrauchte Produkte an ausgewählte Standorte für ordnungsgemäßes Recycling zurückzugeben.

Details zu diesem Programm, einschließlich der darin eingeschlossenen Produkte, verfügbaren Standorte, Versandanweisungen, Bedingungen usw., finden Sie auf der http://intel.com/intel/other/ehs/product_ecology

Español

Como parte de su compromiso de responsabilidad medioambiental, Intel ha implantado el programa de reciclaje de productos Intel, que permite que los consumidores al detalle de los productos Intel devuelvan los productos usados en los lugares seleccionados para su correspondiente reciclado.

Consulte la http://intel.com/intel/other/ehs/product_ecology
para ver los detalles del programa, que incluye los productos que abarca, los lugares disponibles, instrucciones de envío, términos y condiciones, etc.

Français

Dans le cadre de son engagement pour la protection de l'environnement, Intel a mis en œuvre le programme Intel Product Recycling Program (Programme de recyclage des produits Intel) pour permettre aux consommateurs de produits Intel de recycler les produits usés en les retournant à des adresses spécifiées.

Visitez la page Web http://intel.com/intel/other/ehs/product_ecology pour en savoir plus sur ce programme, à savoir les produits concernés, les adresses disponibles, les instructions d'expédition, les conditions générales, etc.

日本語

インテルでは、環境保護活動の一環として、使い終えたインテル ブランド製品を指定の場所へ返送していただき、リサイクルを適切に行えるよう、インテル製品リサイクル プログラムを発足させました。

対象製品、返送先、返送方法、ご利用規約など、このプログラムの詳細情報は、
http://intel.com/intel/other/ehs/product_ecology（英語）をご覧ください。

Malay

Sebagai sebahagian daripada komitmennya terhadap tanggungjawab persekitaran, Intel telah melaksanakan Program Kitar Semula Produk untuk membenarkan pengguna-pengguna runcit produk jenama Intel memulangkan produk terguna ke lokasi-lokasi terpilih untuk dikitarkan semula dengan betul.

Sila rujuk http://intel.com/intel/other/ehs/product_ecology untuk mendapatkan butir-butir program ini, termasuklah skop produk yang dirangkumi, lokasi-lokasi tersedia, arahan penghantaran, terma & syarat, dsb.

Portuguese

Como parte deste compromisso com o respeito ao ambiente, a Intel implementou o Programa de Reciclagem de Produtos para que os consumidores finais possam enviar produtos Intel usados para locais selecionados, onde esses produtos são reciclados de maneira adequada.

Consulte o site http://intel.com/intel/other/ehs/product_ecology (em Inglês) para obter os detalhes sobre este programa, inclusive o escopo dos produtos cobertos, os locais disponíveis, as instruções de envio, os termos e condições, etc.

Russian

В качестве части своих обязательств к окружающей среде, в Intel создана программа утилизации продукции Intel (Product Recycling Program) для предоставления конечным пользователям марок продукции Intel возможности возврата используемой продукции в специализированные пункты для должной утилизации.

Пожалуйста, обратитесь на веб-сайт http://intel.com/intel/other/ehs/product_ecology за информацией об этой программе, принимаемых продуктах, местах приема, инструкциях об отправке, положениях и условиях и т.д.

Türkçe

Intel, çevre sorumluluğuna bağımlılığının bir parçası olarak, perakende tüketicilerin Intel markalı kullanılmış ürünlerini belirlenmiş merkezlere iade edip uygun şekilde geri dönüştürmesini amaçlayan Intel Ürünleri Geri Dönüşüm Programı'nı uygulamaya koymuştur.

Bu programın ürün kapsamı, ürün iade merkezleri, nakliye talimatları, kayıtlar ve şartlar v.s dahil bütün ayrıntılarını ögrenmek için lütfen http://intel.com/intel/other/ehs/product_ecology web sayfasına gidin.

China RoHS

Intel Desktop Board DH61CR is a China RoHS-compliant product.

The China Ministry of Information Industry (MII) stipulates that a material Self Declaration Table (SDT) must be included in a product's user documentation. The SDT for Intel Desktop Board DH61CR is shown in Figure 25.

关于符合中国《电子信息产品污染控制管理办法》的声明

Management Methods on Control of Pollution from
Electronic Information Products
(China RoHS declaration)

产品中有毒有害物质的名称及含量

部件名称 (Parts)	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
主板组件 Motherboard Assembly	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

○：Indicates that this hazardous substance contained in all homogeneous materials of this part is below the limit requirement in SJ/T 11363-2006.

×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

×：Indicates that this hazardous substance contained in at least one of the homogeneous materials of this part is above the limit requirement in SJ/T 11363-2006.

对销售之日的所售产品,本表显示我公司供应链的电子信息产品可能包含这些物质。注意：在所售产品中可能会也可能不会含有所有所列的部件.

This table shows where these substances may be found in the supply chain of our electronic information products, as of the date of sale of the enclosed product. Note that some of the component types listed above may or may not be a part of the enclosed product.

Figure 25. Intel Desktop Board DH61CR China RoHS Material Self Declaration Table

EMC Regulations

Intel Desktop Board DH61CR complies with the EMC regulations stated in Table 19 when correctly installed in a compatible host system.

Table 19. EMC Regulations

Regulation	Title
FCC 47 CFR Part 15, Subpart B	Title 47 of the Code of Federal Regulations, Part 15, Subpart B, Radio Frequency Devices. (USA)
ICES-003	Interference-Causing Equipment Standard, Digital Apparatus. (Canada)
EN55022	Limits and methods of measurement of Radio Interference Characteristics of Information Technology Equipment. (European Union)
EN55024	Information Technology Equipment – Immunity Characteristics Limits and methods of measurement. (European Union)
EN55022	Australian Communications Authority, Standard for Electromagnetic Compatibility. (Australia and New Zealand)
CISPR 22	Limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment. (International)
CISPR 24	Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement. (International)
VCCI V-3, V-4	Voluntary Control for Interference by Information Technology Equipment. (Japan)
KN-22, KN-24	Korean Communications Commission – Framework Act on Telecommunications and Radio Waves Act. (South Korea)
CNS 13438	Bureau of Standards, Metrology and Inspection. (Taiwan)

FCC Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions related to the EMC performance of this product, contact:

Intel Corporation, 5200 N.E. Elam Young Parkway, Hillsboro, OR 97124
1-800-628-8686

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to

radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications to the equipment not expressly approved by Intel Corporation could void the user's authority to operate the equipment.

Tested to comply with FCC standards for home or office use.

Canadian Department of Communications Compliance Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numerique német pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Réglement sur le broullage radioélectrique édicté par le ministére des Communications du Canada.

Japan VCCI Statement

Japan Statement translation: This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

Korea Class B Statement

Korea Class B Statement translation: This equipment is for home use, and has acquired electromagnetic conformity registration, so it can be used not only in residential areas, but also other areas.

이 기기는 가정용(B급)으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적 으로 하며, 모든 지역에서 사용할 수 있습니다.

Ensure Electromagnetic Compatibility (EMC) Compliance

Before computer integration, make sure that the power supply and other modules or peripherals, as applicable, have passed Class B EMC testing and are marked accordingly.

Pay close attention to the following when reading the installation instructions for the host chassis, power supply, and other modules:

- Product certifications or lack of certifications
- External I/O cable shielding and filtering
- Mounting, grounding, and bonding requirements
- Keying connectors when mating the wrong connectors could be hazardous

If the power supply and other modules or peripherals, as applicable, are not Class B EMC compliant before integration, then EMC testing may be required on a representative sample of the newly completed computer.

Product Certifications

Board-Level Certifications

Intel Desktop Board DH61CR has the regulatory compliance marks shown in Table 20.

Table 20. Regulatory Compliance Marks

Description	Mark
UL joint US/Canada Recognized Component mark. Includes adjacent UL file number for Intel Desktop Boards: E210882.	
FCC Declaration of Conformity logo mark for Class B equipment.	
CE mark. Declaring compliance to European Union (EU) EMC directive, Low Voltage directive, and RoHS directive.	
Australian Communications Authority (ACA) and New Zealand Radio Spectrum Management (NZ RSM) C-tick mark. Includes adjacent Intel supplier code number, N-232.	
Japan VCCI (Voluntary Control Council for Interference) mark.	
S. Korea KCC (Korean Communications Commission) mark. Includes adjacent KCC certification number: CPU-DH61CR (B).	
Taiwan BSMI (Bureau of Standards, Metrology and Inspections) mark. Includes adjacent Intel company number, D33025.	
Printed wiring board manufacturer's recognition mark. Consists of a unique UL recognized manufacturer's logo, along with a flammability rating (solder side).	V-0
China RoHS/Environmentally Friendly Use Period Logo: This is an example of the symbol used on Intel Desktop Boards and associated collateral. The color of the mark may vary depending upon the application. The Environmental Friendly Usage Period (EFUP) for Intel Desktop Boards has been determined to be 10 years.	

Chassis- and Component-Level Certifications

Ensure that the chassis and certain components; such as the power supply, peripheral drives, wiring, and cables; are components certified for the country or market where used. Agency certification marks on the product are proof of certification. Typical product certifications include:

In Europe
The CE mark indicates compliance with all applicable European requirements. If the chassis and other components are not properly CE marked, a supplier's Declaration of Conformity statement to the European EMC directive, Low Voltage directive (as applicable), and ROHS directive, should be obtained. Additionally, other directives, such as the Radio and Telecommunications Terminal Equipment (R&TTE) directive may also apply depending on product features.

In the United States
A certification mark by a Nationally Recognized Testing Laboratory (NRTL) such as UL, CSA, or ETL signifies compliance with safety requirements. Wiring and cables must also be UL listed or recognized and suitable for the intended use. The FCC Class B logo for home or office use signifies compliance with electromagnetic interference (EMI) requirements.

In Canada
A nationally recognized certification mark such as CSA or cUL signifies compliance with safety requirements. The Industry Canada statement at the front of this product guide demonstrates compliance with Canadian EMC regulations.

ENERGY STAR*, e-Standby, and ErP Compliance

The US Department of Energy and the US Environmental Protection Agency have continually revised the ENERGY STAR requirements. Intel has worked directly with these two governmental agencies in the definition of the new requirements. This Desktop Board meets the ENERGY STAR Program for Computers: Version 5.0 Category A requirements.

For information about ENERGY STAR requirements and recommended configurations, go to http://www.intel.com/go/energystar.

The Desktop Board also meets the following international requirements:

- Republic of Korea e-Standby program
- European Union Energy using Products (ErP) Lot 6 directive